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ABSTRACT

The World Conservation Union brings together states, government agencies, and a diverse range of non-governmental organizations (NGOs) in a unique world partnership that seeks to influence, encourage, and assist societies throughout the world to conserve the integrity and diversity of nature as well as to ensure that any use of natural resources is equitable and ecologically sustainable. This book contains case studies in environmental communication and education that were presented at the General Assembly workshop of the World Conservation Union held in January 1994. The book is divided into three sections: the first seeks to provide some bases for planning education and communication, the second looks at NGO education programs, and the third addresses planning education at the national level. Papers include: (1) "Influences on Pro-environmental Practices" (Joy Palmer); (2) "Behaviour, Social Marketing, and the Environment" (William Smith); (3) "A Basis for Environmental Education in the Sahel" (Raphael Ndiaye); (4) "Communication: An Instrument of Government Policy" (Agnes Gomis and Frits Hesselink); (5) "Seabird Conservation on the North Shore of the Gulf of St. Lawrence: The Effects of Education on Attitude and Behaviour towards a Marine Resource" (Kathleen Blanchard); (6) "Environmental Education Programmes for Natural Areas: A Brazilian Case Study" (Suzana Padua); (7) "Addressing Urban Issues Through Environmental Education" (Shyamala Krishna); (8) "The CAMPFIRE Programme in Zimbabwe: Changes of Attitudes and Practices of Rural Communities towards Natural Resources" (Taparendava Maveneke); (9) "IUCN in Environmental Education in Western Africa and the Sahel" (Monique Trudel); (10) "A Matter of Motivation" (Ibrahim Thiaw); (11) "Education and Communication Support to the Establishment of Protected Area Systems" (Rutger-Jan Schoen); (12) "Canada: National Environmental Citizenship Initiative" (T. Christine Hogan); (13) "The Netherlands: Inter-departmental Cooperation on Environmental Education" (Peter Bos); (14) "Scotland: Developing a National Strategy for Environmental Education" (John C. Smyth); (15) "Spain: The Coordination of Environmental Education" (Susana Calvo); (16) "Australia: Community Involvement in Conservation of Biological Diversity" (Chris Mobbs); (17) "Australia: Education and Extension: Management's Best Strategy for the Great Barrier Reef Marine Park" (Donald J. Alcock); (18) "Nepal: Environmental Education and Awareness as Elements of the National Conservation Strategy" (Dadri Dev Pande); (19) "Zambia: Environmental Education" (Juliana Chileshe); and (20) "Ecuador: Raising Environmental Awareness" (Marco Encalada). (JRH)

ED 402 160

Planning education to care for the earth

Joy Palmer, Wendy Goldstein, Anthony Curnow

Editors

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IUCN
The World Conservation Union

Planning education to care for the earth

IUCN - The World Conservation Union

Founded in 1948, The World Conservation Union brings together States, government agencies and a diverse range of non-governmental organizations in a unique world partnership: over 800 members in all, spread across some 132 countries.

As a Union, IUCN seeks to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable. A central secretariat coordinates the IUCN Programme and serves the Union membership, representing their views on the world stage and providing them with the strategies, services, scientific knowledge and technical support they need to achieve their goals. Through its six Commissions, IUCN draws together over 6000 expert volunteers in project teams and action groups, focusing in particular on species and biodiversity conservation and the management of habitats and natural resources. The Union has helped many countries to prepare National Conservation Strategies, and demonstrates the application of its knowledge through the field projects it supervises. Operations are increasingly decentralized and are carried forward by an expanding network of regional and country offices, located principally in developing countries.

The World Conservation Union builds on the strengths of its members, networks and partners to enhance their capacity and to support global alliances to safeguard natural resources at local, regional and global levels.

IUCN - Commission on Education and Communication - CEC

The Commission on Education and Communication is one of IUCN's six Commissions, a global network of voluntary, active and professional experts in environmental communication and education, who work in NGO, government and international organisations, professional networks and academic institutions. The daily work of CEC members is about how to encourage people to take responsibility in their personal and social behaviour for the environment. CEC specialists are experts in learning processes, how behaviour is changed and in communication management.

The CEC network facilitates exchange and improves expertise in how to motivate and guide people's participation, through education and communication, to conserve and sustainably use natural resources. The CEC network also advocates the value of education and communication.

The CEC vision is that if we seek to conserve biodiversity, to use renewable resources sustainably and to develop sustainably, then environmental considerations have to become a vital factor in all our decision making. To have environmental concerns become the basis of all people's thinking and doing is the vision of CEC.

Planning education to care for the earth

Joy Palmer, Wendy Goldstein, Anthony Curnow, Editors

IUCN - Commission on Education and Communication
IUCN - The World Conservation Union 1995

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The World Conservation Union

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This book presents case studies in environmental communication and education by non government organizations (NGO) and governments. The ideas presented in the papers are those of the authors. Most of the papers were presented at the IUCN - The World Conservation Union, General Assembly workshop in Buenos Aires in January 1994 organised by the Commission on Education and Communication. A few papers have been added, those of John Smyth, Joy Palmer, and co-authors Agnes Gomis and Frits Hesselink. The IUCN Commission on Education and Communication presents these examples to encourage planning and management of educational programmes by both governments and NGO. Advocating the effective use of education and communication as an instrument of environmental policy is part of the mission of the Commission.

The presentation of material in this document and the geographical designations employed do not imply expression of any opinion whatsoever on the part of IUCN or of other participating organisations concerning the legal status of any country, territory or area, or concerning the delimatation of its frontiers or boundaries.

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Good will, collaboration and a ready giving of time and expertise are characteristic of IUCN commissions. This book happened because one Commission member, Dr Joy Palmer, of Durham University, UK, took on voluntarily the original editing and selection of papers. Thanks are due to Lynn Carrington and Ann Scott of the University of Durham for typing substantial portions of the manuscript, to Cecilia Nizzola, IUCN, for her contributions to typing and to supporting the Commission's work, and to Anton Goldstein who voluntarily scanned and corrected the original articles during his holidays.

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The IUCN environmental education programme, which assists the Commission on Education and Communication in its work, has been in the main supported by the Netherlands Ministry of Agriculture, Nature Management and Fisheries: Department Nature, Forests, Landscape and Wildlife from 1991-1993, and from 1994-1995 in conjunction with DANIDA. The support of the Netherlands and Danish governments is greatly appreciated.

Foreword

My introduction to IUCN - The World Conservation Union, was at the General Assembly held in Buenos Aires, Argentina, in January 1994. I had just been designated Director General of the Union. I found it enormously stimulating to join delegates from all parts of the world - from governments and non-government organisations alike - as they debated, discussed and planned ways to care for the earth and its peoples. Their energy, sense of commitment, and enthusiasm impressed me and fired up my own enthusiasm for the job before me.

Three months later, in assuming office as Director-General, I took up the challenge of working to forge that energy and commitment into a more powerful force for conservation. This meant further stimulating the alliance between IUCN members, the voluntary expert networks we call Commissions, and the secretariat. It seems very apparent that only when these three "pillars" are interlocking, that we have the underpinning the Union needs to take on the daunting environmental tasks we have before us.

I feel strongly that if we are to stand a chance of addressing the world's complex environmental problems, we have to motivate public participation in caring for the earth, while meeting the development needs of people. It is now universally recognised that education and communication are essential tools in making this ideal of "conservation and sustainable development" a reality and a part of popular thinking, acting and doing. That, at least, is the theory. As always, the practice is not so obvious.

The interface between theory and practice is exactly what IUCN was looking at in Buenos Aires, where workshops provided an opportunity to share and analyse international experiences based on the principles embodied in *Caring for the Earth, A Strategy for Sustainable Living*. To explore one of these principles, that we need to change personal attitudes and practices in order to care for the earth, IUCN's Commission on Education and Communication organized a workshop entitled "Changing attitudes and practices". This book is a direct result of the papers presented at that workshop.

The book has three sections: the first seeks to provide some bases for planning education and communication, the second looks at NGO education programmes, and the third at planning education at the national level.

Thus, these sections play to one of IUCN's unique strengths: its ability to bring together government and NGO organisations behind the banner of conservation. No other organisation has NGOs, national governments, and governmental organisations as its members. But in order to get the governments and NGOs to really work together, we must recognize that each has different needs and different capacities. While NGOs may be critical of government action at times - and often rightly so - , they also have much to offer governments in a positive sense. NGOs are good facilitators in fostering community participation in environmental work, a role some

governments find difficult to handle. NGOs are also undertaking numerous environmental initiatives throughout the world. Governments can learn from these experiences to help shape better policies and actions. Likewise, governments have a specific role, born of their resources and accountability to their citizens, that makes them essential partners in conservation. This was clearly demonstrated in the Australian case study found in this book, where the government helped share experiences amongst NGOs and community groups, thus fostering more effective action. In short, this book shows that after examining the various needs and capacities of governments and NGOs, the two would do well to look for more opportunities to work in a collaborative way.

One example of this comes in the area of information. Often NGOs need timely and clear information if they are to accomplish their goals. Governments can assist in making this sort of information available. In Canada, to use another example described in the book, the government supported a programme to prepare the sort of environmental information that would be needed by a model "environmental citizen." Recognising that they could not educate on their own, the government formed partnerships, both to prepare material and, more importantly, to use it in education programmes. The results of this work are fascinating. I would encourage both governments and NGOs to extract the lessons from this case study.

Another clear message of this publication is that education can help bring about participation and thus merits further investment if we are to see progress towards environmental goals. Furthermore, governments can support environmental education through policies and by providing funding. As an example, to give environmental education a boost, six Ministries in the Netherlands committed funds to prepare a strategy which would help integrate environment and sustainable development into both schooling and non formal education. Again, this approach is illuminating.

On the non-governmental side, the factors that have led to the success of NGO programmes are documented in a group of studies found in the second section of this publication. A conclusion that may be drawn from those studies is that NGOs have a critical role to play in creating environmental awareness and in working with communities to ensure that the sustainable use of natural resources can be used as a basis of development. In Canada, for example, attitudes and behaviour towards a marine resource - seabirds in this case - were changed as the result of an education programme developed by a private foundation working in close cooperation with the Canadian Wildlife Service.

These NGO studies emphasise that the success of a communication strategy depends on how well one "does one's homework." It is important to know what has to be changed and why, before looking at the tools that can be used to bring that change about. For this reason, research is an essential part of any educational programme. It not only helps provide an understanding of the people's perceptions and practices, but it can also shed some light on the barriers that stand in the way of change. This message is reiterated in studies from Zambia, the Sahel, and North America.

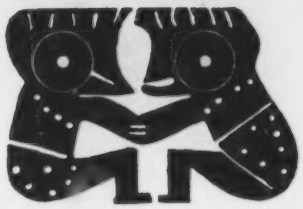
Other case studies presented show that it is necessary to work on the structural factors that may impede change in behaviour. For example, in order for communities to derive direct financial benefits from natural resources, as is the case of communities in Zimbabwe, NGOs have needed to contribute to the establishment of new laws and regulations. At the same time, through educational programmes, NGOs reinforce local democracy in the management and conservation of resources.

Educational programmes often require a supporting infrastructure. A waste management project in India, for instance, needed local government support to provide containers, and sites for composting. The waste collection workers had to be trained. Success lay in working with all the concerned sectors and community groups from the planning stage onwards.

Additionally, the case studies collected herein show that evaluation needs to be an integral part of the educational process. Often, the results of evaluations can provide powerful arguments for expanding educational efforts when they demonstrate how these efforts have led to an obvious improvement in the environment. The importance of evaluation is revealed by the programme on seabirds in Canada, or by the case study from Brazil, where communities were shown to care for a natural area as a result of education. On the other hand, work in Ecuador has shown that raising awareness, and even knowledge, may alone not lead people to change their practice. A more integrated strategy is suggested.

All in all, a major lesson that can be drawn from the case studies in this book is that we all need to reflect, learn and profit from experience. Sharing lessons learned in planning and managing education and communication is a means of improving our work in the area of education and communication. Apart from that, if we are indeed to have people take responsibility for environment and sustainable development, education and communication are important means at our disposal. Governments and NGOs both have important roles to play, the challenge is to ensure that they work together and that, in both cases, their effectiveness and reach are increased. For this reason and in this hope, we are pleased to help share these studies.

David McDowell
Director General IUCN



Part 1

Some bases for planning education and communication

Influences on pro-environmental practices

Joy A. Palmer

Abstract

Certain experiences are shown to have influenced pro-environmental behaviours in a study of UK environmental educators. The results are compared with a similar study in the USA. Have schools been influential? What is the role of family and outdoor activities? The implications of the study to policies and practices in the UK are described.

Those responsible for organising and implementing education and communication programmes which are intended to help people learn about and care for the environment should certainly know something about learning experiences that produce active and informed minds. This chapter will attempt to give some understanding of the influences and experiences which develop pro-environmental behaviours.

A research study in the United States by Tanner (1980) highlighted life experiences that produce adults who are informed about and actively promote environmentally positive behaviour. Conservationists were asked to identify the formative influences that led them to choose conservation work. Youthful experiences of the outdoors and of pristine environments emerged as the most dominant influence, supporting Tanner's hypothesis (1974a, 1974b) that children must first come to know and love the natural world before they can become concerned with its care.

Following on from this work, Palmer (1993) generated data about formative experiences and environmental concern from a larger sample of adults. This study focused on environmental educators - a group of active and informed citizens who know about and care for the environment in their adult lives. An outline of the study was sent to members of the National Association for Environmental Education in the United Kingdom. They were asked to provide their age, gender, details of their demonstration of practical concern for the environment, and an autobiographical statement identifying the experiences which had led to that concern. They were also asked to recount what they considered to be their most significant life experience and to write a statement indicating which, if any, of the years of their lives were particularly memorable in the development of positive attitudes towards the environment. Only the aims and purposes of the research were notified to participants so that they were able to provide completely original responses that had not been biased by supplied examples.

Of 232 useable responses, 102 came from men and 130 from women. Categories of response were coded and only explicit or prominent references in individual statements were scored. Responses were neither weighted nor ranked between or within statements. Weighting suggested by the subject - identification of a single most important influence - was, however, noted and included in the analysis.

Thirteen major categories of response were established, some with sub-categories, in the final analysis (Table 1). "Outdoors" included three substantial sub-categories: childhood outdoors (97 respondents), outdoor activities (90), and wilderness/solitude (24). The 97 references to childhood outdoors included details of growing up in rural areas, holidays in the outdoors and childhood participation in outdoor pastimes.

Table 1. Number of Subjects Identifying with Each Major Category of Response (n=232)

	Number	%
Outdoors	211	91
Education / Courses	136	59
Parents / Close relatives	88	38
Organisations	83	36
TV / Media	53	23
Friends / other individuals	49	21
Travel abroad	44	19
Disasters / negative issues	41	18
Books	35	15
Becoming a parent	20	9
Keeping pets / animals	14	6
Religion / God	13	6
Others	35	15
Total	232	

"Education/courses" referred to two sub-categories: higher education or other courses taken as an adult (85 respondents) and school courses (51). Twenty-three subjects reported that school programmes had no influence on them; others described courses, particularly at higher and secondary education levels, as being very significant.

The third largest category of response - "parents and close relatives" (88 respondents) - and the separate category - "friends and other individuals" (49) - demonstrated that ideas and examples set by others are critical formative influences.

The role of organisations in developing environmental concern was also

shown to be important. This category (83 respondents) was sub-divided between the influence of youth organisations such as scouting, guiding and similar programmes (28), and influence of membership of adult organisations concerned with environmental matters and "green" thinking (55).

Other main categories of response were "TV/media", "Books" (notably Rachel Carson's "Silent Spring"), "Foreign travel", "Negative issues" (notably environmental catastrophes, nuclear threats, cruelty to animals, pollution), "Becoming a parent", "Keeping animals", and "Religion". Significant responses scoring less than 10 were grouped in "Others" (35 respondents) which included such responses as living in a large city, health issues, music, poetry, death, personal heritage and personal networking. Eighty of the 232 respondents identified their single most important life experience or influence. The results are given in Table 2.

Table 2. Number of Subjects Naming Single Most Important Influence (n=80)

	Number	%
Outdoors	23	29
Education / Courses	7	9
Parents / Close relatives	21	26
Organisations	5	6
TV / Media	2	2
Friends / other individuals	4	5
Travel abroad	5	6
Disasters / negative issues	4	5
Books	3	4
Becoming a parent	1	1
Keeping pets / animals	0	0
Religion / God	1	1
Others	4	5
Total	80	

The data were analysed more finely to examine differences in response across the age groups, and to establish correlations between the factors of response. The positive experiences of nature and the countryside in childhood, it was found, were much more commonly identified in the older age groups than in the youngest. The figures for the enjoyment of outdoor activities in adult life and interest in gardening, agriculture and horticulture gave similar results. Those who mentioned their employment also showed clear differences. Less than 10 percent of the under-30 age group referred to the influence of their work; this aspect of life was mentioned by 74 percent of the over-50s. The influence of books and

papers which deal with environmental issues emerged in 33 percent of the life accounts of the under-30s, but in only 11 percent of those supplied by the over-50s.

The types of organisation that have an influence provided another interesting difference. Those dealing with the natural world, such as Naturalist Trust and the Royal Society for the Protection of Birds, were considered more influential by the oldest age group; organisations concerned with the danger of human impact on the global environment - for example Greenpeace and CND - are more influential with younger citizens.

A correlation between individual factors was only possible with the most important responses. Two significant correlations (at 1 percent level) were found: one between childhood experiences of nature and the influence of close family and the other between childhood experience of nature and work-related influences.

This study confirms the findings of Tanner that childhood experience of the outdoors is the single most important factor in developing personal concern for the environment. In the Palmer study, subjects in all the age groups made extensive and detailed references to early childhood days of exploring the natural world and deriving sensory experiences in the open air. They also stressed the crucial importance of parents, teachers and other adults. Many statements testified to the significant impact of the knowledge and example of others on the early learning of respondents.

The impact of formal programmes concerning the environment in the field of higher education is confirmed by the data of the study, and this is encouraging. The majority of respondents citing education as a single most important influence were writing about degree-level courses. Others in this group wrote about advanced self-chosen (A-level examination) courses in school.

One of the most disturbing findings, perhaps, is the total lack of references in the study data to a school course below A-level as a single most important influence. Moreover, of the 51 respondents citing school lessons or courses as a significant influence, 38 referred specifically to A-level courses and related field work. A number of respondents made clear statements to the effect that formal school programmes had little or even no influence on their thinking in relation to the environment.

Studies such as those of Tanner and Palmer clearly raise important issues for debate and action by those who establish policy and provide environmental education (EE) programmes at all levels. Policy-makers and educationalists alike need to take serious account of the need to give young people the opportunity to have a wealth of positive experiences in outdoor habitats.

Financial economies in the United Kingdom are forcing environmental and outdoor education centres to close down. This is possibly the case in other

countries. Environmental programmes may be marginalized in the process of curriculum reform. Such developments tend to reduce the number of well qualified and caring environmental educators and curriculum development staff.

These trends have serious policy implications. The data gathered in the Palmer project could have a crucial influence on the people responsible for school budget preparation and curriculum development programmes, by providing the understanding that positive experiences **in** the environment are vital to the development of concern **for** it.

It seems appropriate in the light of the study to reconsider the content of courses for intending teachers at all levels (not only those concerned with advanced examination work). All teacher trainees must be given not only the subject-matter knowledge of environmental issues but must also understand the ways in which this may effectively be passed on to pupils in a classroom. In educational terms, knowledge of the pedagogic content is as important as knowledge of the subject itself.

Finally, the importance of the sense of "ownership" has to be stressed. Many of the autobiographical accounts make this obvious. If young people - and indeed adults - feel that they belong to a place or a project, and perceive the direct relevance of the environment to their own lives, then genuine care, concern and a desire to take positive action will result. Surely the development of such a sense should underlie the aims of programmes of environmental education.

Explanatory note:

The study described in this chapter is the first phase of an extended investigation into the development of peoples' concern for the environment entitled: Emergent Environmentalism. This is an international study, currently funded by the Economic and Social Research Council in the United Kingdom (for work in England and the United States) and the British Council (in Slovenia). Data on the formative experiences of environmental educators now being collected in the United States and Canada will significantly enlarge the research base.

Another aspect of the overall project (ongoing at the University of Durham) involves a study of the environmental knowledge base of young learners. In this phase we are considering what children know and understand about selected environmental issues as and when they start school and how that knowledge develops during the first two to three years of formal education.

The overall project will generate data with far-reaching implications for the design and development of EE programmes. These data will also serve as a sound academic research base with relevance for all those engaged in the planning and implementation of policy at both national and local community levels.

Conclusion

Understanding the way learning occurs and what stimulates environmental behaviours is as important as environmental information. The study showed that childhood outdoor activities were influential in determining the commitment of environmental educators to the environment. Yet, primary education was not influential. This suggests that primary education should provide outdoor learning experiences. "A" level and tertiary education was very influential, as were parents and close relatives. Teacher training needs to reflect these facts, providing not only environmental information but also how this can be most effectively taught to bring about commitment and action.

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Behaviour, social marketing and the environment

William A. Smith

Abstract

The Applied Behavioural Change (ABC) Framework, developed by the Academy for Educational Development, USA, helps programme managers to design, develop and evaluate interventions which lead to change of behaviour on a large scale. It integrates lessons drawn from community participation, communication planning, social marketing and behavioural science. ABC gives managers an accurate idea of the perceptions of communities and individuals towards proposed alternative courses of action. It assists development agents faced with the increasingly complex task of helping communities decide how best to protect the environment by assuring benefits now, as well as for generations in the future.

Introduction

Environmental protection is among the greatest challenges facing social science today. In meeting this challenge, we have the tools both to improve environmental sustainability and at the same time to contribute to the understanding of how our species interacts with the environment.

The growing debate between a "behaviour change model" and a "participatory model" is wasteful and distracting. We do not need to choose between behaviour and participation or between behaviour and critical consciousness. We need both the full and conscious participation of the people whose behaviour must change if the environment is to survive, and the application of sound social and environmental science to the design of programmes which will help those people to make workable changes in their behaviour. We have several models for integrating participation and behaviour that have already proven successful.

When a woman in Africa cuts the last remaining local tree for fuelwood, she is at the end of a long chain of environmentally unsound behaviours. Too many people have been living in too consumptive a style to sustain the forests upon which her people depend. If too many individuals of a single species behave in a way incompatible with the ecosystem, that ecosystem will die.

Our future rests on a belief that human behaviour matters and that human behaviour can change to more sustainable patterns. As humans, we appear

not only able to recognize the damage we are doing but also, at least in isolated cases, to change reproductive and consumptive behaviours towards more sustainable patterns. In putting the question - how best to influence human behaviour to be more environmentally sound? - we move out of the realm of philosophy into the arena of empirical science.

Unique behavioural challenge

Environmental protection is a unique behavioural challenge for several reasons:

- Highly complex inter-relationships. (Fuelwood consumption affects forests and influences biodiversity, which influences jobs and food supply, which influences pesticide use, which influences human and environmental health etc.). Behavioural changes in any one area often fail to have significant positive effects elsewhere in the chain, while significant change in a single behaviour can produce unanticipated and sometimes negative effects on other elements.

- Environmental science is still in development. The speed of changing knowledge leaves the public sceptical and makes the environmentalists vulnerable to their opponents.

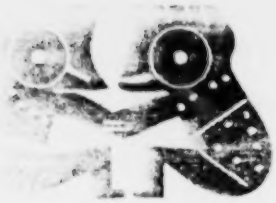
- Delayed benefits compete against immediate gain. Environmental problems often have consequences spread across generations and lose immediacy for a public facing urgent daily issues. Competing behaviours on the other hand offer jobs, income, and quick rewards.

- Environmental problems are often framed on a global scale, giving the impression to individuals that they can do little to help. They deny their own ability to change or engage in piecemeal efforts.

- A politicized North-South debate that influences public perceptions and therefore behaviour. In developing countries, policy-makers and the public are offended by Western insistence that they must save the environment at the expense of jobs and rapid industrial development, and forego the benefits of consumption known in the West. The North criticizes the South for irresponsibility and the South responds with accusations of hypocrisy against the North.

Environmental behaviours nevertheless are changing, and the present generation is more environmentally active than any other in human history. Social science helps explain why and how these changes are occurring.

The environmentalist in search of a key to human behaviour should start with proven psychological determinants, such as:



- Perceived benefits. What advantage do people think they will get by adopting a new practice?

- Perceived barriers. What do people worry about, think they will have to give up, suffer, put up with or overcome in order to get the benefit they decide they want from a new action?

- Social norms. Whom does the audience care about and trust on this topic, and what do they think that person/group wants them to do?

- Skills. Is the audience able to perform the new action without embarrassment or without failing?

Applied Behavioural Change (ABC) Framework

The Academy for Educational Development (AED) has developed a framework for programme design and implementation that offers a way to translate social science into practical programmes that help people to behave in environmentally sound ways. This is the Applied Behavioural Change (ABC) Framework.

The ABC Framework is intended to help programme managers to design, develop and evaluate interventions which lead to large-scale behaviour change. It helps managers who wish to influence human behaviour to answer three practical questions:

- What do I do first?
- What do I manage at each stage to ensure a comprehensive programme?
- What milestones do I monitor and evaluate?

The framework has three components: participatory programme development (a sequential process for organizing and conducting large-scale behaviour change interventions); social marketing (a strategic system for people centred decision making); and a behavioural constellation (which describes the priority behavioural targets to assess, monitor and evaluate).

Participatory programme development

Programme development is built on the premise that people must shape and control their own transformation and that participatory processes best achieve this goal.

The process is cyclical, constantly reframing interventions to correct mistakes or to address changes in the target audience. All systems intermingle participatory research with programme action (fig. 1).

The first step is to assess the problem, the community's current behaviour,

knowledge and attitude towards the problem, and the delivery mechanisms available to influence that community.

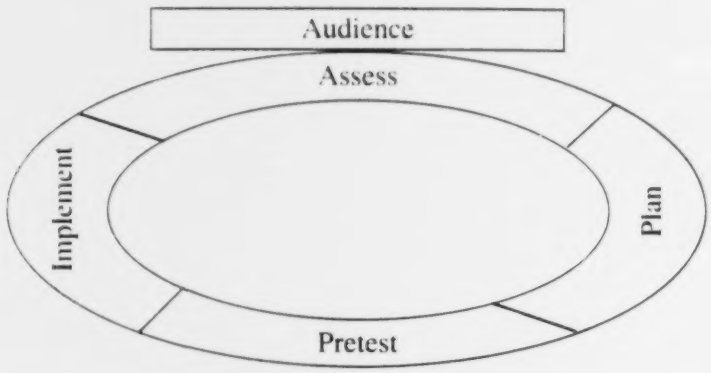


Figure 1. The Programme Development Process.

The next move is to plan a strategic intervention that integrates products, services, messages, and support to a specific audience through various channels in a way that is attractive, accessible and persuasive. This is best done by the community affected working with scientists and behavioural specialists.

The products, materials and tactics selected for dissemination through face-to-face, community, print and mass media channels are then pre-tested.

The fourth stage is to implement the delivery of products, services, materials, messages and support through appropriate channels.

The circle is closed by Step 5, in which the original Step 1 is transformed into continuous monitoring and modification of inputs so as to address changing audience needs.

Social marketing

Social marketing is a management system based on the concept of exchange. It holds that people take action in exchange for benefits. Programme managers must identify the existing benefits for a particular audience and a specific behaviour, the possible new benefits and barriers, and how to offer a choice that provides more benefits and fewer barriers. At every stage it is the community and the individual that determine which benefits and barriers are most important.

Building a better product/service, making it more accessible, lowering its cost, or persuading people to appreciate its benefits over those of the competition are ways of making such a determination. The centrepiece is the target audience and the benefits that audience wishes to receive for adopting

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new behaviours. The process should be fundamentally participatory and responsive to people's needs.

Social marketing has defined four domains of influence - the four Ps: product, place, price, and promotion (fig. 2).

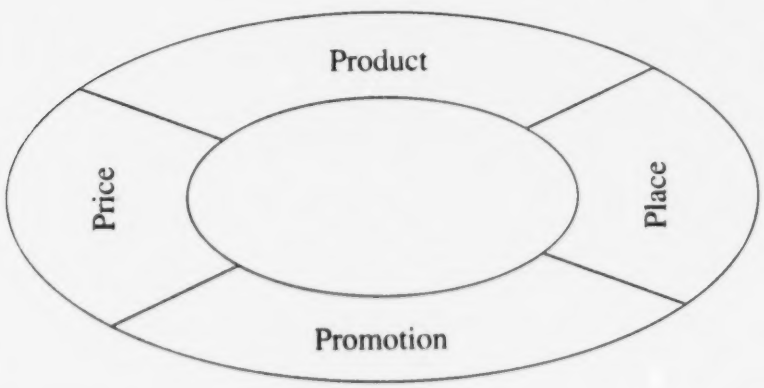

Figure 2. The Social Marketing Inputs.

The product P represents the programme decisions associated with selecting and shaping the idea, commodity, behaviour, or service (the product) to be promoted. At each process stage, managers must focus on the qualities of the product which will increase the benefits to the target audience.

Place refers to the system through which the products flow to users and the quality of service offered where those products are made available. Place focuses largely on overcoming one important obstacle to use: difficulty of access. Place also includes the training of providers (community-based outreach workers, peers, friends, neighbours, professionals). Social marketing focuses attention on their role as an effective sales force, stressing their skills in communication and persuasion.

Price refers to more than monetary cost. It represents all the barriers a person must overcome before accepting the proposed social product, including loss of status, embarrassment, the time lost in adapting to a new practice.

Promotion - the fourth P - includes the functions of advertising, public relations, consumer promotion, user education, counselling, community organization and inter-personal support. It also encompasses decisions about what will be said about the behaviour and its benefits, and on the channels to be used to get the message across to the right people at the right time.

Each P makes an irreplaceable contribution to successful behavioural change, but the proportional role of each in any given situation may vary. The art of successful social marketing is to achieve the right mix so that

scarce resources may be concentrated to overcome the most urgent problems.

Programmes have worked best when communication planning and social marketing have been combined with the behavioural intervention in an integrated planning framework (fig. 3).

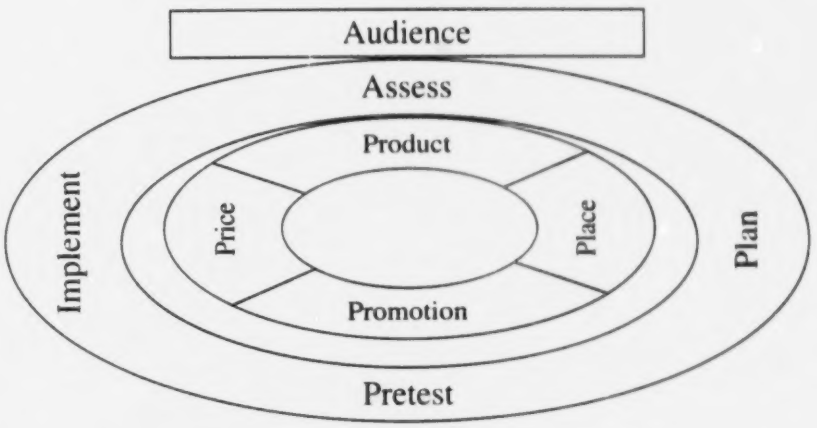

Figure 3. Integrated Planning Framework.

The audience and its existing behaviour are at the top of the diagram. The participatory planning process turns counterclockwise over time, moving through the patterned sequence of assess, plan, pre-test, implement and monitor. At the same time, the four Ps of the social marketing wheel revolve rapidly within the larger participatory planning wheel, illustrating that at every programme stage, all four Ps of the marketing mix are assessed, planned, pre-tested, implemented and monitored. This interaction of audience, behaviour, planning process and marketing provides managers with a comprehensive yet practical programme planning process adaptable to the requirements of most behaviour change tasks.

Behavioural constellation

People do not always do what they know they should do. Motorists "know" to car pool, but don't; many families "know" to recycle, but don't. Fishermen "know" not to dynamite coral reefs, but many do. Explaining the knowledge-behaviour gap is the domain of behavioural science.

Between knowledge and behaviour lie specific attitudes toward behaviour, signposts which have played a large part in shaping understanding of lifestyle-related problems.

AED has developed a highly selective behavioural constellation or

checklist of such determinants based on social science theory (fig. 4). The behaviour constellation helps identify the targets of greatest opportunity for change. This is divided into two categories: internal/cognitive factors (for example, knowledge, attitudes and beliefs) and external/structural factors (for example, access to services, cost, policy, social influence). Understanding the importance of these determinants in people's lives helps programme managers to concentrate scarce programme resources on those factors which are most likely to promote sustained behavioural change.

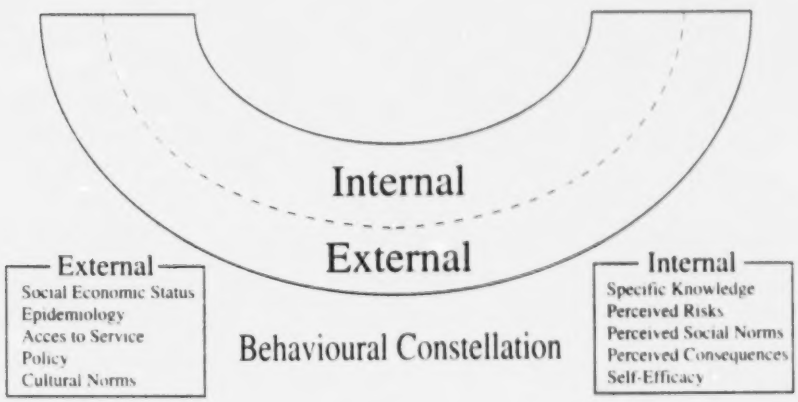

Figure 4. Behavioural Constellation: Checklist of determinants of behaviour.

The ABC Framework has in the last decade helped to select those factors that have consistently proved to be important in working with different populations across diverse cultural and socio-economic settings.

Audience and behaviour dominate the ABC Framework (fig. 5). All the variables essential for designing interventions are present. The framework is practical and flexible. It does not pretend that all factors are equally important, but selects targets of opportunity based on experience and proven theory, and it allows planners to use field research with communities to select activities tailored to an audience, a community, and a specific behaviour.

Recycling behaviour in a national park

The ABC Framework was used in the context of an environmental protection project to encourage people to separate garbage in two public parks at the foot of the Washington and Lincoln Memorials in Washington D.C., in the interests of better recycling. The purpose of the specific social marketing exercise was to assess the behavioural characteristic of an existing programme.

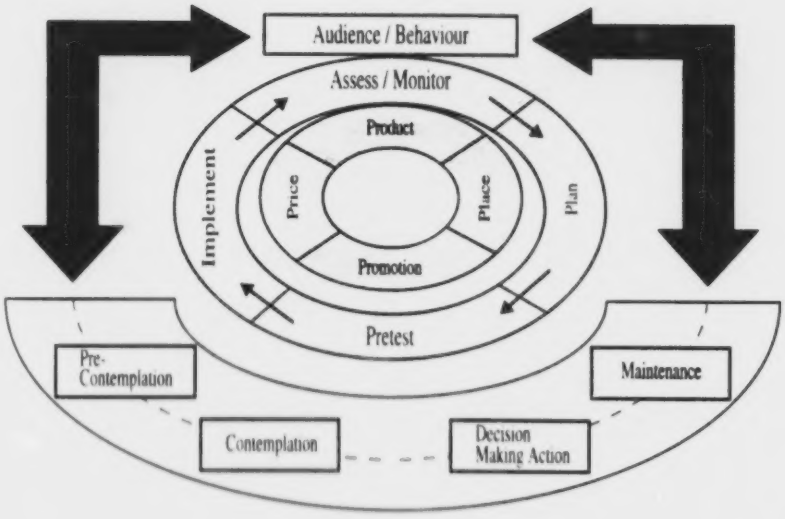

Figure 5. Applied Behavioural Changes Framework.

Four sub-areas were delineated for observation purposes:

- near a concession stand where an attractive signboard on the importance of recycling had been placed, alongside a clearly marked container for plastic, glass and aluminum plus a traditional garbage bin;
- a street corner, not served by the concession stand, but with a recycling container and a traditional bin;
- a highly congested bus stop in front of the Lincoln Memorial where the same signboard had been placed;
- a concession area near the Lincoln Memorial with multiple garbage receptacles, the recycling sign and a rest area for visitors.

Existing signs

The signboard made three points. It defined for the public that glass bottles, plastic bottles, foam cups and take-out containers, and aluminum cans should be placed in bins separate from other garbage (the articles were depicted and there was also an illustration of two young children using the recycling container). Secondly, it illustrated the technology of recycling, and finally it indicated how much garbage is produced on the Mall every week.

The recycling containers displayed the symbol of recycling plus the words: "plastic, glass, aluminum only", and two symbols indicating that hot dog and potato chips wrappers were not to be thrown into the can. The garbage bins were of a different size and shape from the recycling containers and were labelled "Trash Only". There was a third container unlabelled and different from the other two located next to the concession stand in sub-area D.

The hypothesis was that the presence of new signs and the availability of recycling trash containers would lead to a high level (80 per cent) of proper disposal of recyclable drink cups and other recyclable products.

The three activities in the case study were to determine whether the hypothesis is accurate (behavioural assessment and direct observation); to determine which problems in the observation areas might be solved by intervention (problem analysis and data assessment); and a brainstorming session on possible interventions to correct identified problems (programme planning).

Observations were conducted on two days - weekend and weekday - for two periods of 60 minutes each. Teams of two-three observers worked at each site for a total of 12 to 15 hours. Observers were trained for one hour on how to observe and record data.

Results

Most people took no note of the expensive, well-designed and well-placed signs and did not recycle properly. Observation of the area and the contents of the bins showed that cups clearly marked as recyclable were almost evenly distributed in the recycling and non-recycling containers.

One conclusion was that people came to the Mall to have fun - not to recycle. They expected to see signs with information about the monuments they had come to see - not about recycling. Another conclusion was that there were too many types of garbage bin and too many conflicting labels which led those people who tried to recycle to make mistakes or to give up.

Finally, the information programme was designed to reach everyone entering the area , but only two percent bought any item that could be recycled. The general approach of public signs was thus a "hit or miss" strategy that missed more often than it hit.

A suggested strategy:

A marketing strategy would lead to quite a different solution. First, a clear goal would be set: 90 percent of recyclable cups would be placed in a recycling container.

Second, a target audience would be identified: all individuals purchasing recyclable cups at the concession stand.

Third, containers would be standardized and made cleaner to distinguish between garbage and recycling containers.

Fourth, signs would be replaced by a training and incentive programme for sales staff at the concession stand. They would be trained to provide a simple verbal cue to every customer buying a recyclable cup to instruct, remind, and thank people for recycling that cup. Staff could be given a small financial reward every day the recycling goal was met.

Conclusion

Environmental education must give people the cognitive tools to judge what is environmentally sound. The knowledge that serves as the basis for environmental practices and policies changes rapidly as science progresses. People must be educated to assess new developments and integrate them into the broad context.
At the same time, environmental social marketing must give people the behavioural experience that environmental change is not only possible but can be positive and beneficial for them today, as well as for the future.

Development agents find increasingly complex the job of helping communities to decide how best to protect the environment and at the same time assure benefits now. The choice of a comprehensive framework for behavioural change gives these managers a more accurate idea of the perceptions of individuals and communities concerning the alternatives proposed.

Lessons learned

The most important lesson we have learned about education is that most people are very smart and have excellent reasons for doing even those things which seem the most self-destructive to outsiders. To help people protect the environment we must understand, respect and utilize their worldview and to offer "benefits" they care about, reduce "barriers" they worry about, and compete aggressively with the harmful behaviours they now practice.

Six steps to behaviour change

1. Observe behaviour.
Identify what people are doing, what they like and don't like about it. Who does it and who doesn't. Don't just ask questions. Look, count, record behaviour. Arrange for a few people to do what you want the whole community to do. Watch the problems they have and note the things they seem to like.

2. Listen to the people you hope will change.
Ask what matters to them,talk about how your target behaviour fits into their overall life. Get them to talk about incidents, episodes, events that made a difference to them. Look for what they want to get out of the behaviour and who matters to them.

3. Decide what you think matters.
Compare people who do what you want with those who don't. Look for changing trends over time. Describe who you want to change as though they were a character in a novel you wanted readers to know. What are they like, where do they live, how do they act out the behaviour you care about? By this time, you should realize that you have several audiences - different segments to be reached in different ways.

4. Can your thinking be generalized?
Take the points you have decided are critical; such as the benefits you think they care about, the kinds of messages and words you think will work, and the kinds of spokesperson and channels you think they believe in. Test your assumptions with a representative survey.

5. Deliver benefits people want.
Deliver benefits, not information. Solve barriers people face, don't just "educate" them. This means that service delivery and communication have to be planned together, with one complementing the other. Service delivery provides the benefits, but communication helps people believe benefits are real and credible. Persuade as well as inform. Make people feel good about change. Touch their lives with hope and don't scare them into denial.

6. Monitor effects.
You will make mistakes. To find and fix them, you need to monitor what's going on. Don't just evaluate your programme when it's all over. Selectively monitor those things you expect to make a difference as the programme progresses. Monitor by looking for indicators of the behaviours you expect to change.

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A basis for environmental education in the Sahel

Raphael Ndiaye

Abstract

Effective environmental education programmes in the Sahel recognise the importance of first understanding the people's perceptions of the environment, obstacles to change in practice, as well as the ways in which information is communicated. The stages in the environmental education process are described as are the ways programmes in the region have been developed by different agencies. Succesfull programmes have stimulated action by groups to improve the local environment.

Why environmental education?

The complicated environmental situation in the Sahel involving excessive deforestation, endemic drought, overgrazing, difficult access to water, wind erosion and delicate ecosystems has reached a point where even human survival in the region is in question.

In spite of many programmes of reforestation, very strong pressures experienced since the colonial era have hindered efforts for conservation, restoring wildlife balance, and rational environmental and natural resources management. It is clear that additional strategies are required. Approaches of information, awareness-raising and social mobilization related to conservation and restoration of the environment must be integrated in a broad process of environmental education.

Environmental education can awaken communities to the dangers facing their environment. It can develop local capacities to understand and analyse this situation and arouse a sense of responsibility to face the issue. It can promote appropriate attitudes and behaviour, teach simple techniques and practices and prompt action in favour of conservation, protection, restoration and improvement of the environment. Although until now aimed at Sahel children and youth, the environmental education approach offers a unified strategy for wider application. Implementation however implies taking into account two sets of factors:

- the target population's basic concepts and perceptions in the field of environment and their bearing on the educational processes;

- internal and external socio-economic and socio-political constraints.

Concepts and Perceptions

Dialogue and mutual understanding, as well as environmental education itself, are possible only if the bases of reference of participants i.e. the cultural, social, economic and political background, are well identified and taken into account.

Basic concepts

Basic concepts concerning the environment arise from tradition and are accepted without question as axiomatic. It is on the basis of these concepts that reality is named, classified and organized with their own internal logic and consistency. To initiate dialogue the modern agronomist for example, must realize that the peasant reacts in an implicit way with regard to these axioms. Only by understanding the peasant's frame of reference, how the existing system works and what its weaknesses are, can the agronomist justify his interference and his offer of improvements.

Perceptions

Basic concepts and the way they organize reality largely determine local perceptions with regard to the environment. They may involve symbolic, religious, aesthetic or other cultural issues. The educator faces a field of meanings and rituals that determine attitudes, encourage or forbid certain practices in daily life. Many rituals consist of making sure all positive forces of nature contribute to a fruitful action in particular for the essential rainy season.

The environmental education approach will only be successful if it is based on an understanding of the target group's perception, thereby optimizing its assent and reasoned participation.

Socio-economic and socio-political levels

The Sahel is a land of old traditions, of societies deeply rooted in history and generally very structured. An analysis of social organization of the actors in the region must be conducted. The internal dynamism and blocking factors must be identified so as to rely on the former and to overcome the latter. These reference elements must be completed by taking into account the group's economic organization and the internal factors that determine them.

Ways in which the political dimension manages the organization and distribution of power within the group and its relationship with the outside world must be studied. It is essential to identify the leaders and the

institutions which exist, as well as the strategies of alliance the people develop with regard to projects.

Educational process and procedures

The proposed environmental education process must be as close as possible to the educational processes and procedures developed in the course of ages for the transfer of knowledge. Existing systems can serve as springboards to ensure that as many people as possible are involved.

If educational processes and procedures foreign to the group are to be used, which may be a kind of opening and enrichment for its members, it is necessary to measure their difference with regard to local practice; readapt them to this context; motivate the actors by raising their awareness of the educational innovation proposed to them, and make sure that these do not make the people look more limited intellectually than they are.

In short if environmental education is to change behaviour, it must first acquire a relatively extensive knowledge of existing attitudes and practices. This will entail identifying all positive factors that could be a springboard for environmental education by strengthening positive attitudes and behaviour or as bases of improving the process and optimizing expected results.

Constraints

Constraints are internal and external to the group.

Internal constraints
Among internal constraints, there are cultural, social, political and economic factors which directly or indirectly degrade the environment. These must be identified to guide the content of environmental education toward the most effective approach to modify behaviour.

It may be that the environmental context has changed and that practices which previously were appropriate have become damaging, for example, burning practices that as, a whole, are now ill adapted to the Sahel's present environment.

In the same way population growth and settlement lead to over exploitation of land, rendering ecosystems precarious, and shortening the fallow periods needed for natural regeneration.

Another pressure on the environment is felling trees for firewood. Energy needs are still high despite the efforts to introduce appropriate technologies such as improved stoves. These have been rather widely spread in the region, although with mixed success.

External constraints

Some external constraints are :

- Land tenure and national legislation which limits peasants' benefits from their positive environmental actions.
- Ever increasing poverty increases pressure on natural resources, while it limits or makes impossible recourse to alternate solutions, such as gas.
- Unequal exchanges in north -south commerce which devalue the south's efforts, while increasing poverty.
- Mounting external debt, burdensome interest payments and low prices for commodity exports, limiting development programmes and reinforcing poverty.

Facing such constraints, a target group could doubt its capacity to overcome them and regard environmental education as worthless. It is therefore necessary to have excellent knowledge of the group and to overcome this handicap at once, particularly as the results of education cannot be immediate.

Many groups in the Sahel cling to their land and consider that their life and that of their descendants' is to be lived there and nowhere else. This attachment facilitates launching the environmental education process.

Objectives of environmental education

The objectives of environmental education consist of:

- raising awareness of environmental problems,
- analysing these problems in order to understand them,
- developing appropriate attitudes and behaviour, simple techniques and practices,
- action for conserving, protecting, restoring and improving the state of the environment.

It is important that the environmental education process:

- support the populations,
- avoid developing and extending the social security mentality,
- integrate field technologies by developing and improving those with a positive effect on the environment, according to needs,
- link rural and urban actions as much as possible,
- be long lasting,
- take into account local administrations, trying to detect in them the potential allies which can reinforce the action.

The stages of the environmental education process:

- identify the physical, social, cultural, economic and institutional context,
- motivate the group if necessary, in particular by convincing its members that change for the better is possible,
- harmonize environmental concepts and expression among the various actors involved,
- explain the environment to all levels of society (children, youth, men, women, to groupings according to perceptions or interests),
- express environmental issues in terms of activities to be undertaken. These activities should aim at solutions to problems and be linked to available and usable resources, expressing these activities in terms of educational activities to be undertaken. These activities should aim at solutions to problems and be linked to available and usable resources,
- express these activities in terms of educational objectives and training programmes, with everybody agreeing on the results and /or products to be achieved,
- defining a partnership between the main actors, specifying the roles and tasks of each party.

Environmental education programmes

Interventions in environmental education occur in the following ways:

- People approach an organization to request its intervention (bottom up).

The organization should carefully listen to the people in order to propose an appropriate course of action. It is necessary to get to know the environment, its difficulties, reasons for choosing the expressed need, the knowledge, know-how, aspirations, and perceptions of the problem. The intervening organization has to accept the group's organization and modes of traditional management before attempting change. The crucial stage is to have the population analyse the environmental situation and lead it to become responsible for courses of action to be made at each step.

The NAAM groups in Burkina Faso for example begin by determining how the peasant lives, what he is, what he wants, what he knows and what he can do. This is the 3A method, according to which people must be the **A**uthors of the process or project, its **A**ctors; and ensure its supervision according to their **A**nima (soul) or their culture. From NAAM's point of view, such a process should make it possible to obtain a non imposed development which does not damage the environment.

- The environmental education process is proposed to a group, in order to address an environmental issue (top down).

This process is the most common in the Sahel. Institutions and organizations which are conscious of the environmental issues come to the field with the aim of prompting populations to change their behaviour and attitudes. This is the method followed by Tiers Monde, IUCN, Danish Red Cross, PFIE-CILSS, and others. The organization may propose a ready made process. Faced with serious "silent emergencies", which the population doesn't see holistically, with all the interactions and inter relations, the organization aims to create awareness leading to concerted action. First, the organization must take into account the existing structures, whether traditional or administrative, as well as the knowledge and values of the local culture. Then make sure that the process is accepted by the population. All concerned people must be motivated to participate in the analysis of their environment, in the expression of their needs, and in the choice of environmental priorities. Regular contacts between the organization and population are vital to reinforce confidence and motivation.

The approach and methodology must be adapted to local human and material resources, and the dynamics of the human environmental situation.

- Following an intervention on a major problem, the organization takes this opportunity to address an environmental issue that it considers important, but which may not seem so to the people at the time.

An organization may agree to respond to a request for support in order to build acceptance and confidence in a population so that it can later work on an issue of importance to it. For example, the Malian Red Cross' support was sought to help develop market gardening. The Red Cross took this opportunity to also address family planning issues.

When formal education services agree to undertake aspects of environmental education the school can become a support or a relay to the community. The approach does not yet imply acquisition of knowledge in view of school exams, but rather in view of better controlling environmental problems and of field actions.

In the example of PFIE-CILSS (PFIE: Programme de Formation et d'Information pour l'Environment and CILSS: le Comité Inter-Etats de Lutte Contre la Sécheresse au Sahel - Inter-States Committee for Drought Control in the Sahel), the president of CILSS proposed that member countries of this organization take on an environmental education pilot project and evaluate it.

The approach involves nine Sahel countries. It is necessarily less flexible on both project managers' and actors' part and must be spread out over a longer period of time.

Comments

It is worth noting that in the school context most environmental education programmes experienced right from the start a reserve on the part of parents who looked disapprovingly on adding an activity to the curriculum that might take time away from preparing for exams.

In the village of Nogollar in the Thies region, Senegal, a parent strictly forbade his child to take part in the environmental education activities for this reason. A team of school inspectors had to go to visit him and to convince him of the merit of environmental education. They were able to show that children participating regularly in environmental education are not only more successful in school but also get more involved in community activities.

The tools for education in the Sahel are varied. Their selection depends on the approaches and actors and local specifics. The relative value of the tools should be assessed before they are deployed. Even with the best tools if one does not obtain the populations' confidence, no action will be implemented after the departure of the educators, so regular contact and dialogue with the target public are essential.

Some successful actions

Youth from Yindingisi
An environmental education programme with NAAM Group support, inspired youths in Yatenga, Burkina Faso, to join the fight against wind erosion. They dug holes to retain water, and broke up the laterite - stony, arid and very hard - surface to let grass grow. Left fallow for three years, the land accumulated arable earth where millet and trees can be planted. The youths no longer want to leave the land for the capital.

School Mooundiaye Thiaw
In Senegal, a school in Thies offers another example of action inspired by environmental education, by ENDA Tiers Monde and the Senegalese Red Cross. The school's surroundings had become a garbage dump, creating considerable health hazards. Pupils mounted an awareness campaign in the neighbourhood, obtained garbage containers with the help of the city administration, enlisted the help of youth organizations in the district, and obtained drainage material from an aid agency. They hired professional storytellers "girots" and organized an environmental "tam tam" session on the garbage site. After the entertainment and dancing, the pupils presented an analysis of the neighborhood environment and its harmful effects, prompted people to collect the refuse and to promise to put it in containers in the future. The site has been cleaned up and the entire neighbourhood has accepted a collective responsibility to keep it that way.

Conclusion

These successes, along with those described in Monique Trudel's paper, the work of the PFIE-CILSS project in formal education and the network of environmental educators that has now developed in the region, build our hopes in environmental education and justify the action and mobilization around this new and essential issue for the Sahel.

The important lessons are that environmental education is based on really knowing about the people's concepts and perceptions, how the society functions and the obstacles to their participation. Traditional ways of learning need to be considered for effectiveness before introducing new ways of learning, which can create a situation in which the people are ill at ease. Identifying and building on all existing positive characteristics of environmental behaviour is a strong basis for a programme.

Communication: an instrument of environmental policy

Agnes Gomis and Frits Hesselink

Abstract

The role of communication as an instrument to achieve policy is considered in relation to other government instruments. Communication is seen as an umbrella which encompasses education and marketing. Communication managers in government have a specialist role to advise on and use appropriate communication instruments for the different stages of the policy cycle. Well managed communications enable the government to develop responsibility for environmental policies in community groups and individuals.

Communication can be an important policy instrument

Scientific research shows that communication always plays an important role when governments implement successfully their environmental policies. Policy instruments work better if they are properly communicated to the respective target groups. Figure 1 summarises the policy instruments on which governments have to draw to implement environmental policy. Depending on circumstances communication can be used alone or in a mix with other instruments.

Communication can help increase knowledge, raise awareness and change attitudes and / or behaviour. An information campaign can make individuals aware of their responsibility for the environment and create a solid base for environment policy in the community. Education can stimulate the learning process and help children and people in general to make environmentally responsible behaviour part of their everyday lives.
Figure 2 shows what communication experts bring under the umbrella of the concept which we call communication.

Communication as a separate instrument can be successful where not many obstacles exist to change behaviour towards more environmentally friendly practices. But research shows that communication has a better chance of success if it is combined with other instruments such as legislation or financial instruments. Especially when the aim is to change attitudes and behaviour.

The policy process

Research and public affairs studies in different countries have revealed that policy making is a cyclic process of basically four main stages:

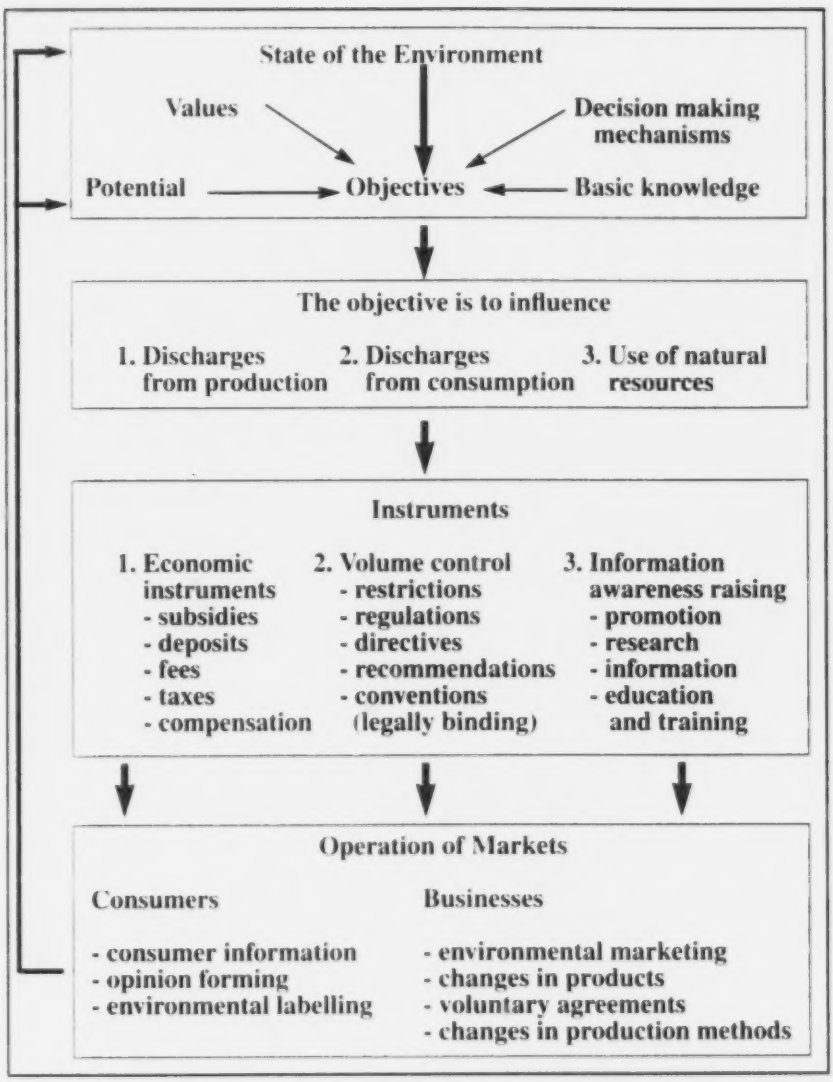


Figure 1. Hierarchy of instruments for sustainable development. "Finnish Action for Sustainable Development" (page 132). Ministry of the Environment of Finland.

- identifying the issue; or agenda setting
- formulating the policy
- implementing the solutions
- management and control.

Communication has a different significance and plays different roles in each of these stages. Figure 3 shows the role of the government in the phases of the policy cycle. During the identification phase the government's role increases gradually, reaching a peak at the end of formulating the policy. Thereafter there is a slow decrease in the government's involvement.

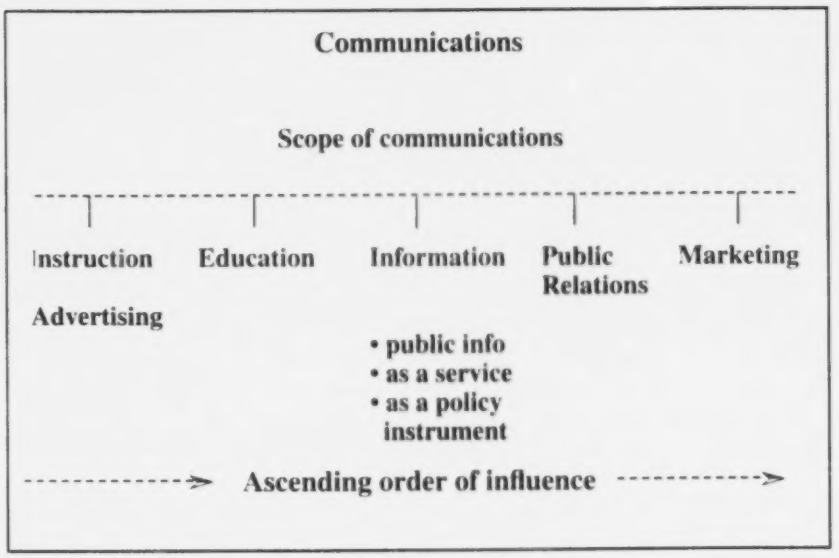


Figure 2. Areas of communications.

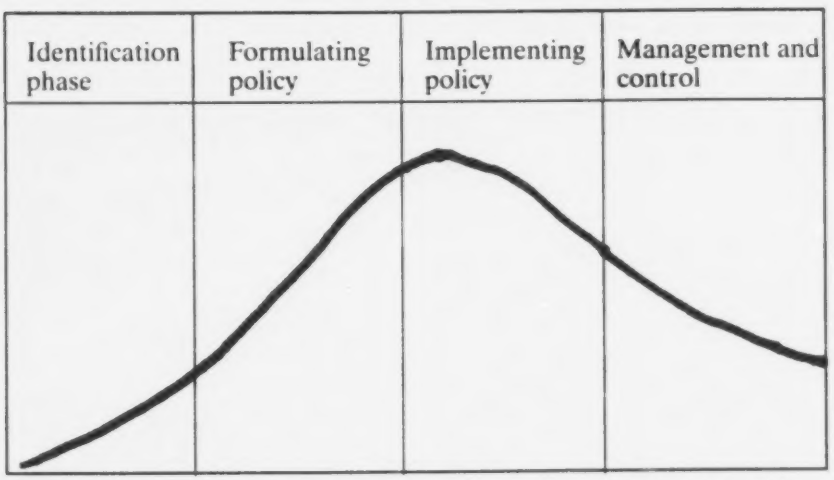


Figure 3. The role of government during different phases of the policy life cycle.

Communication in the policy cycle

Identification phase

At this stage the role of communications is to place environmental issues on the agenda. Organisations in society play an important part here. The central government adopts a relatively low profile. Communication services need to listen to what people are saying so that they can identify problems promptly and pin point specific issues affecting the target groups.

of environmental policy. At this stage activities also involve communicating opinions, drawing attention to the issues, mobilizing support and defining themes.

The methods of communication used in this phase are:

- regular opinion and attitude surveys
- mass media content analysis
- management by speech
- systematic and continuous network with NGO, interest groups and scientific institutions (public relations)
- regular briefings and interviews and meetings with interest groups and the press

Formulating environmental policy

At this stage activities can raise public awareness of environmental problems, increase the public's understanding of the policy proposals and create broadly based support for the issues. The problems tackled are those which legislators have accepted but for which solutions have not yet been found. At this stage the target groups are opinion leaders, decision makers and the general public.

The methods of communication are:

- knowledge/ attitude/practice (KAP) surveys
- integrating communication in the mix of policy instruments
- design of a communication strategy
- communication to /consultation with those who will be involved (public relations)

Implementing environmental policy

The aim at this stage is to communicate information about how to proceed. The idea is to communicate the substance of policy and the accompanying measures. At this stage communication will be mainly aimed at specific target groups.

Methods of communication:

- information campaigns
- specific information materials
- marketing and advertising
- instruction
- education
- consultation of target groups (public relations)

Management and control

Here communication is provided as a service to sustain newly adopted attitudes and behaviour. The aim is to provide information about the policy that is being pursued as well as feedback reactions to that policy.

Communication may be in the form of an active service explaining complex legislation and regulations. It may also be used to announce modifications to policy instruments, for example legislation.

Methods of communication:

- monitoring and communication of results
- regular opinion and attitude surveys
- informing on changes of policy design and implementation
- education

Policy Life-cycle Phase	Methods of communication
Identification	- regular opinion /attitude surveys - mass media content analysis - analysis of communication materials of NGOs, consumer groups - systematic and continuous network with NGOs, interest groups, scientific institutions - regular briefings/ interviews and meetings with interest groups
Formulating Policy	- knowledge/ attitude/practice (KAP) surveys - integrating communication in the mix of policy instruments - design of communication strategy - informative extension/communication to disclose issues and policy options to those who will get involved
Implementing Policy	- communication as an independent instrument - communication complementary to other instruments - informing groups on the use of other instruments (news, laws, subsidies etc) - ex-ante evaluation through qualitative research
Management and Control	- public information - informing on changes of policy design and implementation - regular opinion/ attitude surveys (since age- linked target groups are replaced by younger generations)

Figure 4. Summary of the methods of communication in the different phases of the policy life cycle.

Planning environmental communication

Most of the communication activities should be planned well ahead. A strategy should define the following elements (shown in figure 5): an analysis of the issues, the role of communication in solving the issues, determining who it is important to reach (target groups), the message, how this is most effectively delivered, (means/media), the budget, organisation and evaluation.

Steps to prepare a communication strategy

1. **Analysis of issues**
2. **Outline the role of communication**
3. **Determination of target groups**
4. **Determination of communication targets**
5. **Determination of strategy/message**
6. **Determination of means**
7. **Budget**
8. **Organisation**
9. **Plan**
10. **Evaluation**

Figure 5. The elements of a communication strategy.

When education is part of the strategy you have to take into account the different modes of education and the specific educational systems you are dealing with. Integrating environmental education into the school system takes a rather long time and a special strategy to approach the different actors in the formal education system. Before all students in a country can benefit more than ten years of intensive effort and investment are needed.

Internal communication

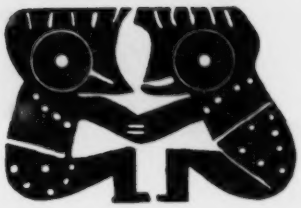
External communication: communication with the world outside your organisation has been described above. But internal communication, communication within your organisation, is as important, if not more. This includes instruction, information, public relations, training, management by walking around and direct communication. The most important aims of internal communication are to create support for the organisation's mission

and policy and provide staff with knowledge and motivation. It is intended to make sure that everyone's energy is focused in the same direction. Your own people are your best ambassadors and sales force for your plans, policies and activities.

Conclusion

Communication can play an effective role in governments' achieving their policies. After all people determine whether policies will be acted on, or become part of the way of life. Communication stimulates the readiness of people to change attitudes and practices, to become involved and to participate. Communication as an instrument of policy is often under used, or not used in a stategic way with other instruments.

Understanding where the policy is in its progression from identification, formulation, implementation, and management is an essential basis for determining which communication instruments should be used. A communication strategy depends on doing your homework, since knowing "what" has to be changed, needs to combined with "how" that change is to be brought about.



Part 2

Lessons from NGO projects

Seabird conservation on the North Shore of the Gulf of St. Lawrence, Canada:
The effects of education on attitudes and behaviour towards a marine resource

Kathleen A. Blanchard

Abstract

On the North Shore of the Gulf of St. Lawrence, Quebec, Canada, seabirds traditionally have been harvested for food. Illegal hunting and disturbance of colonially-breeding seabirds caused severe declines in the populations of several species between 1955 and 1978. A new management plan developed by the Quebec-Labrador Foundation in collaboration with the Canadian Wildlife Service sought to restore the depleted populations while preserving the integrity of the local culture. By 1988, three desired outcomes had been achieved: an increased population of seabirds breeding in sanctuaries; sustained improvement in local knowledge, attitudes and behaviour towards seabirds; and greater local support for, and involvement in, the management process. The programme included youth instruction, leadership training, information dissemination and support building. The success of the programme demonstrates that educational strategies working within the cultural context can help to achieve resource management goals.

Introduction

In *Caring for the Earth*, IUCN - The World Conservation Union, the United Nations Environment Programme (UNEP) and the World Wide Fund For Nature (WWF), stated that environmental education and training can be important in effecting social change towards a sustainable society (IUCN/UNEP/WWF 1991). In North America, there are many environmental education programmes that attempt to provide citizens with the appropriate values, knowledge, skills, and incentives, but many of the programmes fall short of influencing positive change in attitudes and behaviour. Moreover, in resource management agencies, the traditional role of education has been to provide information that increases public awareness and appreciation of natural resources. When perceived simply as a channel for information, education often is given less importance than research, habitat management, and laws and enforcement, for conserving natural resources. *Agenda 21* states that there is a larger, more important role for education in helping societies change their behaviour towards practices that are consistent with sustainable living (United Nations 1993).

Unfortunately, behavioural scientists question whether durable behaviour change reliably follows from information exchange; there are few documented cases where this has occurred (Festinger 1964, Geller et al. 1982, Katzev and Johnson 1987). This is particularly relevant in wildlife management, where agencies, in an effort to change attitudes or behaviour, have often used information materials as a substitute for education programmes (Adams et al. 1988). Just because information is printed in a brochure or displayed on a poster does not mean that the target audience will read, understand, and follow what is being asked, particularly if the message goes against traditions, local norms, or conflicts with personal ethics.

Even when education to achieve a conservation goal is used successfully, seldom is its use carefully evaluated. In a recent report for the United States Fish and Wildlife Service, a conservation education expert reported only six examples from the North American wildlife and environmental education literature of education programmes in wildlife management that helped solve a resource management problem and that were evaluated. The case of seabird conservation on the North Shore of the Gulf of St. Lawrence, Canada, was one of them (Pomerantz 1992). It demonstrates the effectiveness of educational strategies that work within the cultural context to help achieve resource management goals. It also suggests the efficacy of education and training as tools for sustainability in rural areas (Blanchard 1991). The programme has proved successful in helping to reverse population declines in nesting seabirds and in contributing to improvements in the knowledge, attitudes and hunting behaviours of residents.

The issue

Illegal hunting and disturbance of seabirds in sanctuaries on the North Shore of the Gulf of St. Lawrence led to dramatic population declines for several species between 1955 and 1978. The populations of Razorbill (*Alca torda*) and Atlantic Puffin (*Fratercula arctica*) were reduced by 84 and 76 percent respectively. The Common Eider (*Somateria molissima*), Common Murre (*Uria aalge*) and Black Guillemot (*Cepphus grylle*) were also severely affected.

The section of the Quebec coast known as the Lower North Shore, where illegal harvesting was most severe, has some 400 km. of rugged coastline, is without road links to the outside world, and has a population of 5,600 mostly English-speaking residents in 15 fishing communities. Seabirds are traditionally harvested for food. An enforcement programme introduced by the Canadian Wildlife Service (CWS), backed by the provincial wildlife agency and the Royal Canadian Mounted Police, had been insufficient in reducing the level of illegal seabird hunting.

In 1978, the non-profit Quebec-Labrador Foundation (QLF), in consultation with local residents and in collaboration with CWS, developed a new management plan to restore depleted seabird populations in this region while preserving the integrity of the local culture. The programme had four major

components: research, planning, implementation, and evaluation. Each component provided feedback to the others and allowed for modifications over the succeeding 15 years.

Research

The problem was to understand the human and cultural context and to combine this information with biological data relevant to the seabirds. Programmes could then be developed which would lead to an appropriate management policy. A face-to-face survey with heads of households in 1981, conducted in people's homes in line with the local tradition of hospitality, had four aims: gather comprehensive information about illegal harvesting; characterize people's knowledge, attitudes and behaviours concerning seabirds; locate areas where the problem was most acute; and assess public opinion about seabird management. Only 3 out of 140 households sampled refused to take part.

The survey revealed widespread lack of knowledge of wildlife laws and regulations, a universal utilitarian attitude towards seabirds, and a high degree of non-game and out-of-season hunting. The vast majority of heads of household did not know the legal status of the birds being hunted, and 95 percent considered that hunting seabirds was acceptable. The survey identified which species were being hunted and pinpointed the areas where harvesting was most damaging.

Following research, three desirable aims were established by QLF: an increased population of seabirds breeding in sanctuaries; sustained improvements in local knowledge, attitudes and behaviour towards seabirds; greater local support for, and involvement in, the management process.

Planning

A lasting reduction in illegal harvesting called for short- and long-term education strategies and depended on more than the simple enforcement of regulations. The educational goal of a sustained change in behaviour involved teaching practical seabird biology and conservation; developing a conservation ethic; training residents for leadership roles in conservation; and building local support for wildlife policies and regulations.

Meetings were held to ensure that residents participated and agreed with conservation aims and methods. QLF had meetings with CWS to ensure that the educational objectives were in line with the agency's management goals and that the proposed efforts in education complemented those in the fields of enforcement and habitat management. Meetings with other non-governmental organizations such as the World Wildlife Fund and the Province of Quebec Society for the Protection of Birds helped to build support in Quebec and internationally for a culturally sensitive education programme which would help to solve a resource management problem.

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Implementation

Many educational strategies were developed over 15 years, modified in the light of further research, yearly evaluation, community requests, and the availability of funds. Particular strategies were timed for their acceptability to various audiences. Activities were in four basic categories: youth instruction; leadership training; information dissemination; and support building.

Youth instruction

The key activity was a four-day programme at the St Mary's Island Seabird Sanctuary, 15 km. from the village of Harrington Harbour. In a former lighthouse serving as classroom and dormitory, children from 8 to 15 years of age were given hands-on instruction in seabird biology, in wildlife law, and on how to behave in a sanctuary. Emphasis was on the biological and human factors which influence breeding success in seabirds. Instructors created fun learning opportunities and encouraged group discussions rather than preaching conservation. The highlight was a visit to a puffin colony, where participants observed the birds at close range.

Children went home with increased knowledge, greater concern, and the motivation to tell family and friends about their adventures. They started lively discussions about the impact of their families' actions on local bird populations when seabirds were served for dinner. The conservation message spread through the community and along the coast.

Youth programmes also targeted communities that were actively hostile to conservation agents. In one such village, the sons and daughters of local poachers took the roles of seabirds in a play for children. By rehearsing their lines at home, these children taught their parents about seabird biology and conservation. In contrast to the St Mary's Island programme which fostered the development of a conservation ethic, play-acting served to produce short-term local approval for seabird management strategies in small communities where family ties and group norms were powerful influences.

Action-oriented conservation clubs, school presentations, the development of classroom materials about seabirds, and a coast-wide children's poster contest - leading to the production of a calendar of children's seabird art - were other important youth activities. Local opinion leaders strongly endorsed the youth conservation programmes.

Leadership training

A long-term impact required local leadership. Teenagers and adults in the area were trained to take increasing responsibility for conservation. More than 50 volunteers and paid staff have been trained in field ornithology and teaching methodology. By 1993, one-half of the project staff were teenagers from the coast. CWS in the meantime increased its enforcement staff by

employing and training residents as migratory bird officers. Applicants usually had a history of poaching, but their experience combined with training made them very effective wardens. Since 1986, wardens have been at work each year during the nesting season.

Local organizations have been better equipped to support conservation programmes through technical assistance and study tours as well as seed grants in wildlife management, tourism development and the preservation of historic buildings. In the 1990s highest priority in the programme has been given to technical training, leadership development and organization-building capacities. There is an urgent need for training in new skills and for the diversification of the local economy in eastern Canada, where the decline of cod fishing in the north-west Atlantic has put thousands of fishermen out of work.

Information dissemination

The style of information and education materials was locally relevant and practical. These materials were introduced by person-to-person contact rather than through mass mailings. They included a seabird identification poster, a citizens' guide to regulations concerning seabirds, a newsletter for primary schools, and the calendar from the children's poster contest. Community radio stations were used extensively. Residents spoke about their relationship to the wildlife of the coast in a radio co-production with the Canadian Broadcasting Corporation. School lessons, radio programmes and special events were designed to improve local knowledge and encourage positive attitudes.

Although information materials were well received, they were considered less important in changing public attitudes than person-to-person and group activities, particularly those involving hands-on experiences.

Support building

Among the most popular activities in building support for conservation were study tours for conservation leaders from across Canada in 1983, 1984, 1987 and 1992. The tours included homestays in a remote village, visits to the sanctuaries, and participation in community forums on conservation. Study tours fostered pride, heightened local perception of the value of seabirds, and inspired local action to improve sanctuaries. They helped to create alliances between local and regional conservation groups and promoted tourism.

The education programme owed its success to many factors. One was the longstanding reputation of QLF as a provider of social services on the coast. The small size of the population meant that new ideas could be quickly disseminated through well-established channels of communication. The influence of group leaders who endorsed the project was critical. Programmes were introduced by QLF staff - university students from Canada and the United States - who had no government affiliation and often lived

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with local families. Finally, the project was directed by the same person for 12 years and then handed over to another conservation professional, a French-speaking citizen of Quebec.

Evaluation

The management plan achieved its three aims.

Populations of breeding seabirds
Most seabird populations breeding in sanctuaries along the Quebec North Shore increased - some dramatically - between 1977 and 1988. The increases - the figures given are approximate - were greatest among the Alcids: Common Murre (10,200 to 26,000), Razorbill (3,600 to 7,000), Atlantic Puffin (15,200 to 35,000). The numbers of Common Eider and Common/Arctic Terns (Sterna hirundo and S. paradisaea) also rose. The explanations of these increases include better enforcement and the likelihood that more prey food was available. The education programme, however, contributed to a marked reduction in hunting and egg harvesting at the colonies; increased productivity and recruitment rates of the bird population would not otherwise have been possible.

The lesson is that local support for the management effort and the combination of education and enforcement to reduce illegal harvesting were essential elements in the recovery of the bird populations.

Improvements in knowledge, attitudes and behaviour
A comparison of similar surveys made in 1981 and 1988 showed that local knowledge of wildlife regulations and attitudes towards hunting and levels of harvesting of seabirds had significantly improved. The legal status of the Common Murre was stated correctly by 47 percent of respondents in 1981, 64 percent in 1988. The proportion who thought it was all right in general to take seabirds and eggs declined from 95 to 90 percent, while those who thought it should be legal to hunt Atlantic Puffin were halved (54 to 27 percent). Despite the continued belief that birds should be harvested for food, an individual's perspective on the level of harvest changed dramatically. The 1988 survey showed that 48 percent of families were believed to harvest eggs and seabirds compared with 77 percent 7 years earlier. The number of birds identified as needed by a single family each year had fallen from 44 to 24.

Greater local involvement in wildlife management
Greater local involvement in wildlife management can be measured in various ways. These include increased membership in the local wildlife society and youth conservation clubs; more applicants for conservation jobs; increased demand for places in the St Mary's Island Youth Programme; the emergence of conservation committees; local activism (for example, harbour clean-ups); and requests for conservation and tourism training programmes. Training, with the emphasis on greater local involvement, has become the principal direction of the programme. (Blanchard and Nettleship, 1992, and Blanchard, 1994)

Discussion

The education programme promoted thoughtful, informed, positive behaviour (legal hunting, bird study) rather than focusing on stopping negative behaviour (poaching). The programme did not try to introduce activities that would be strangely new to the local culture (raising chickens, for example), recognizing that there were good reasons why previous attempts had not taken hold. Rather than attempting to convince people that it was wrong to kill birds, the programme acknowledged the basic cultural norm: it is acceptable to harvest birds for an occasional meal, especially if they are needed as food. (The need had in fact begun to decline with the introduction of freezers for food storage in the late 1960s, but it took the educational programme to make evident this change.)

Other factors helped to pass on the conservation message. Community leaders influenced their peers, the children, and residents of other communities. The relative isolation of small communities meant that there was little competition for the good things a conservation programme offered. Children, for example, were anxious to take part in the St Mary's Island programme. People responded more to the norms of the group to which they belonged than to regulations, and spreading the message among peer groups was more effective than posting signs or addressing large audiences.

Although harvesting birds was the custom, the culture nevertheless supported the conservation principle that seabird populations be restored to sustainable levels. Working with, rather than against, socio-cultural factors was important so that the goals of both biological and cultural conservation could be attained.

Although the increase in enforcement contributed to the control of illegal harvest, as sociologists would point out, the introduction of extrinsic motivation without regard to other factors would have predictably failed to produce durable, long-term behaviour change (Katzev and Pardini 1987-1988). Furthermore, heavy-handed enforcement alone likely would have triggered reactance, which induces behaviour in the opposite direction (Brehm 1966, Brehm and Brehm 1981). Evidence of this behaviour during the years immediately before the project began took the form of occasional night raids to the seabird colonies for eggs (Blanchard and Monroe 1990). Sociologists agree that durable behaviour change requires the use of techniques such as social commitment, intrinsic behaviour, and supporting attitudes (Heberlein 1981, DeYoung 1985-1986, DeYoung and Kaplan 1985-1986, Katvez and Johnson 1987).

The conceptual framework for an education programme that targets a conservation problem in rural, less developed regions consists of four basic phases: research, planning, implementation and evaluation. This progression allows for feedback, constructive decisions and modifications to future work. Research provides information on the socio-cultural context that is necessary to develop education strategies. It assesses root causes of the problem, identifies audiences and opinion leaders, and leads to the development of shared programme goals. In the planning phase, educational goals are

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established and strategies planned. In the implementation phase, factors including the style of presentation, the timing of activities, and the choice of people to conduct them are determined. Finally, evaluation measures the degree to which the educational aims and the overall management goals have been achieved.

Too often, education programmes consist merely of planning and implementation, without the solid foundation of research or the basis for difficult decisions based on an evaluation of performance.

In a communication and education programme for wildlife conservation, key requirements include an investigation of the problem and its context from both biological and human points of view, the integration of the programme into the overall management plan, cooperation with all the relevant constituents, the inclusion of hands-on activities, leadership roles for local residents, and evaluation from beginning to end.

Several of these features are found in the Quebec North Shore education programme. In particular, the success of the programme depended on six factors:

- Local residents, the wildlife agency and conservation groups agreed on a common goal from the beginning.
- Education was perceived as part of a comprehensive management plan that included research, habitat protection and enforcement; the education programme contributed to a common resource goal and proceeded with agency support.
- The education programme had four phases: research, planning, implementation and evaluation.
- Local residents participated throughout the programme and local leadership roles were encouraged.
- Activities were participatory and hands-on, with fun learning opportunities.
- The programme included short- and long-term components; it has lasted for 17 years and has evolved to address related challenges, including those posed by economic development.

The education programme did not place much emphasis on the indigenous population of Montagnais Indians (14 percent of the local population), nor did it specifically target the worst poachers. The evaluation did not isolate the relative influence of other factors (for example television, introduced in 1979) in a controlled, systematic way. Evidence of the importance and significance of the education programme was, however, satisfactorily established.

This Article is adapted from a longer treatment by K. A. Blanchard published in 1994: see references below.

Lesson learned

Evaluation is the key to improved programming. It suggests how the programme may be modified and helps direct long term planning. The power and efficacy of education will be realized as programmes are evaluated, the results reported to all concerned, and the information used to make future education programmes even better.

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Environmental education programmes for natural areas:
a Brazilian case study

Suzana M. Padua

Abstract

An environmental education programme for the Black Lion Tamarin Project in the Atlantic Forest of Brazil mobilized community participation in the protection of the Morro do Diablo State Park and surrounding natural areas. Initially designed for students, the programme soon reached out to the entire community. Nominal institutional support was given at the outset, but once the programme had demonstrated its effectiveness, other assistance became available. The manifest interest of the local community was decisive in the survival of the programme when institutional support declined. A continuous evaluation procedure helped to ensure effectiveness at each step of the programme from conception through completion.

Introduction

Eighty-two percent of the State of Sao Paulo in Brazil was once covered by natural forest of which less than five percent remains. In the far western part of the State lies the Morro do Diablo (Devil's Hill) State Park, the last significant portion of the interior Atlantic Forest. Deforestation has made the park a highly endangered ecosystem in which several animal species are threatened with extinction. Among these is the black lion tamarin (*Leontopithecus chrysopygus*), the most endangered species of primate listed by the International Union for the Conservation of Nature (IUCN).

The park was once part of a large reserved area which covered 290,000 hectares (ha.). The initiatives of powerful landowners and political leaders and projects for the area which were largely unnecessary have reduced the area to only 34,000 ha. over the past 25 years. Even this area suffers from the impact of projects such as highways, railroads, an airport and hydro-electric plants.

The surrounding population is socially and economically disadvantaged, and before an environmental education programme started, was unaware of the importance of the park and its conservation. Without public involvement, the park had lost considerable territory and its future was unpredictable. To reverse this process, the participation of local communities seemed crucial,

not with the idea of establishing development activities inside the park, but rather of gaining public support through raising awareness of the value of the protected area.

The programme was designed for students and later for the entire community surrounding the park and other areas where the black lion tamarin is found. Due to its rarity, the black lion tamarin became a charismatic symbol of the education programme for the region. It generated public pride which makes it possible to try to protect the whole ecosystem where the primate is found.

For the Black Lion Tamarin Programme a continuous evaluation procedure was adopted to ensure effectiveness at each step from conception to completion. The PPP evaluation model (planning-process-product) was used, and the evolution of the project in these three stages is described in this paper.

Programme Evaluation

Planning	Process	Product
• needs • community contacts • goals and objectives • target public • available resources (human and material) • institutional support • funding proposals	• methods • design & establishment of activities • strategies (pre-visit; onsite; post-visit) • staff training • administration	• achievement of goals & objectives • expected results • unexpected results • using data for programme recycling • using data for programme support • publishing results
Programme structure and design	Decisions on changes & improvements	Recycling Decisions

Figure 1. The PPP Model for Programme Evaluation. Modified form Jacobson (1991) and Padua & Jacobson (1993).

Planning

Needs, goals, objectives, the target public, constraints and available resources were first defined. A preliminary survey showed that local people had very little prior environmental knowledge. Interviews with teachers and community leaders helped to assess the different contextual aspects.

The main goal was the conservation of the park itself. The objectives were to foster appreciation of the park and its rich biodiversity among the surrounding communities. A specially designed school programme introduced students to the park and provided them with the means to increase their knowledge of ecological concepts and shift their attitudes towards nature. Students, as bearers of information, served as vehicles for the involvement of their families and other members of the community.

The accelerated destruction of the local natural environment gave great importance to active public participation in conservation, with the involvement of the local communities. By the time students became decision-makers there might be little left to fight for, so several out-reach programmes, targeting all sectors of the community, from the local authorities and businessmen to labourers, were sponsored.

Institutional support was included in the planning of the programme.The park's staff were encouraged to cooperate. Activities, including the installation of trail signs, were planned and carried out in the park at little cost. The Forestry Institute of Sao Paulo, which administers the park, was very supportive. In order to by-pass bureaucratic constraints, however, proposals were sent to several institutions interested in the conservation of the park. This strategy provided external sources of income which helped the implementation of the education programme.

Process

The content of the Black Lion Tamarin Environmental Education Programme was based on information gathered at the planning stage. Pre-visit strategies included the elaboration of educational materials for local teachers who complained of lack of information on the park, its natural resources, and history. In addition, teachers and students watched a slide presentation before visiting the park.

For on-site activities, three nature trails were prepared for student visits, each focusing on a different aspect (tropical forest biodiversity, ecological concepts, local history and geography). These same concepts were stressed through activities especially designed and carried out at a visitor center which was built for this purpose. "Hands-on" activities were strongly encouraged. These included games and contact with live animals.

Class contests were organized and hand-outs provided with games and information after visits to the park. Instructional methods were usually based on other programmes or on formal education literature. Each activity was pilot-tested and constantly evaluated, and the programme was improved in the course of implementation.

Community-oriented activities included art exhibits, art and sports competitions, and workshops. The local media played an important part in community involvement. Radio is a popular means of communication in

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rural Brazil, so environmental education programmes were produced and broadcast.

High school students and two park employees were trained as nature guides. They were encouraged to contribute ideas and suggest activities. As local people, they helped to make the programme acceptable to the community and to solve specific problems in its implementation.

Product

The Black Lion Tamarin Environmental Education Programme attained an outstanding level of acceptance by the community. By the end of the first year, 6,000 students had visited the park and the average number in each of the succeeding three years was 8,000.

A systematic evaluation involved 144 students assigned to experimental and control groups. The tests measured the increase of knowledge and shifts of attitude before exposure to the programme, after the park visit, and one month later. The results testified to the effectiveness of the programme.

There were other indicators. Families visited the park during weekends. The park's lodging house began to be filled with university students looking for field experiences. Local teachers requested environmental education courses, and nature guides improved their performance by forming study groups. Community interest in the park's conservation was demonstrated in the subjects chosen for floats in local processions for the town's anniversary and at the year's end, for Lions' and Rotary Club parties, and in public initiatives such as a tree planting campaign.

The most important signs came, however, from community involvement in the protection of the park. Garbage, for example, was being dumped in the vicinity of the park, in an area which had been park territory a few years earlier. The threats to the park's rich fauna and flora were explained in a radio interview with an appeal to local leaders and the community to find a solution. The local population reacted by telephoning the radio station and by demanding that the mayor find a solution. A new place for the garbage was found in less than a week.

The community also helped park employees to put out a forest fire. There had been many fires in the past, but the public had never been involved in extinguishing them. Local interest in nature conservation extends beyond the boundaries of the park. The community has spoken up against illegal logging taking place on a privately-owned farm nearby. Businessmen formed a group to plan developments designed to improve the socio-economic situation of the local people. The priorities of all the projects approved were to be non-polluting and to provide opportunities for under-privileged and unskilled citizens.

More recent evidence of community interest in the environment is provided

by demands that the Black Lion Tamarin project be continued. Letters were sent to the park administration in Sao Paulo asking that a resident director be appointed. When this happened, the new director was asked to maintain the education programme.

Conclusion

The Black Lion Tamarin Programme shows that education for conservation can be effective in increasing knowledge and in changing the attitudes and behaviour of people towards the natural environment. Institutional support was nevertheless difficult to obtain and the continuity of the programme was for a time threatened. Public involvement mattered not only as a contribution to the protection of the area, but also as a mandate for the programme's continuity.

The programme is one of many in Brazil which began by targeting students and then reached out to entire communities. Such programmes achieve a wider impact with the involvement of additional educators and university students. Workshops, meetings and publications are useful as a means of exchanging strategies and disseminating results.

Regional conservation initiatives are strengthened by the support of decision-makers. Educators should therefore concentrate on involving the higher leadership: directors of institutions and companies, landowners, entrepreneurs, and politicians. Conversely, many programmes which have demanded an excessive personal contribution from isolated educators have been threatened with termination by a lack of administrative support. The problem in finding support often stems from the divergent interests of decision-makers and conservationists in approaching a specific issue. The biggest challenge for educators may thus be to develop strategies which enhance the awareness of decision-makers of their importance as potential conservationists. There is a need to conduct research on the role of decision-makers in conservation, and to share the results among educators.

Acknowledgements : The success of the Black Lion Tamarin environmental education programme would not have been possible without the support of the local communities, the enthusiasm of the education group, the help of the park's staff, and support from: the Forestry Institute of Sao Paulo - SMA, Apenheul - Holland, Canadian Embassy in Brazil, Fanwood Foundation, the U.S. Fish and Wildlife Service, the Whitley Animal Protection Trust, the Wildlife Preservation Trust International, the World Wildlife Fund. I am grateful to Robert Redick, Jim Ellis and Susan Jacobson for reviewing this manuscript.

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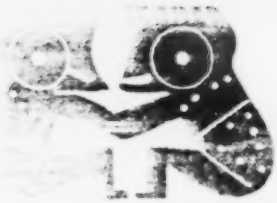

Addressing urban issues through environmental education in India

Shyamala Krishna

Abstract

A communication strategy for an integrated management plan to relieve the problem of garbage disposal in the City of Bangalore has been implemented by India's Centre for Environment Education, Southern Regional Cell (CEE South). In this and other urban environment projects, CEE South aims to bring people together to make them aware of social and infrastructure problems and the methods by which some of these problems can be addressed. Communication and education programmes are designed to encourage participation among citizens. It has been found that people can be moved into action only through personal contact and demonstration of solutions to problems.

Introduction

The metropolitan areas of India today are bursting at the seams. City infrastructures are under stress to the point where problems of environmental degradation - primarily garbage, sanitation, air and noise pollution, poor health and housing facilities, industrial pollution and congestion - seem insurmountable.

The growth of Indian cities is attributed to both to migration from rural areas and to an increase in urban population due to better health care. Country dwellers who migrate to the cities are in reality "ecological refugees" who can no longer support themselves in the highly degraded and vulnerable rural environment. They opt for the inhuman conditions which await them in urban slums where jobs, health facilities and education are relatively more accessible.

However, some 70-80 percent of the urban population are rich or belong to the middle class, and have a much higher rate of consumption of resources such as water, electricity, fuel and other commodities than the poor. Therefore, the poor have little access to these resources and others including housing, educational institutions and transport. This problem is further accentuated by the fact that there is a lack of infrastructure in the slums and settlements where they live.

The advantages of city dwelling have been offset by a decline in the sense of solidarity in time of need and a group or community approach to common

problems which characterize rural societies. Urban dwellers tend to ignore the causes of their problems in adopting the attitude that the provision of basic amenities is the responsibility of someone else: governments or private institutions.

If life in cities is to remain bearable, a change of attitudes, a return to solidarity and cooperation, are needed. This calls for education and awareness of the problems of the urban environment.

Solid waste management in Bangalore

The Centre for Environment Education, Southern Regional Cell (CEE South), took up as one of its major hands-on activities a programme to create awareness among urban people of the need to reduce wastage of resources including water, energy, fuel and other natural resources, of the ill effects of air, noise and water pollution, and of the problems which arise from the improper management of garbage, sewage, industrial effluents and wastes. The steps to evolve a plan of action are in figure 1.

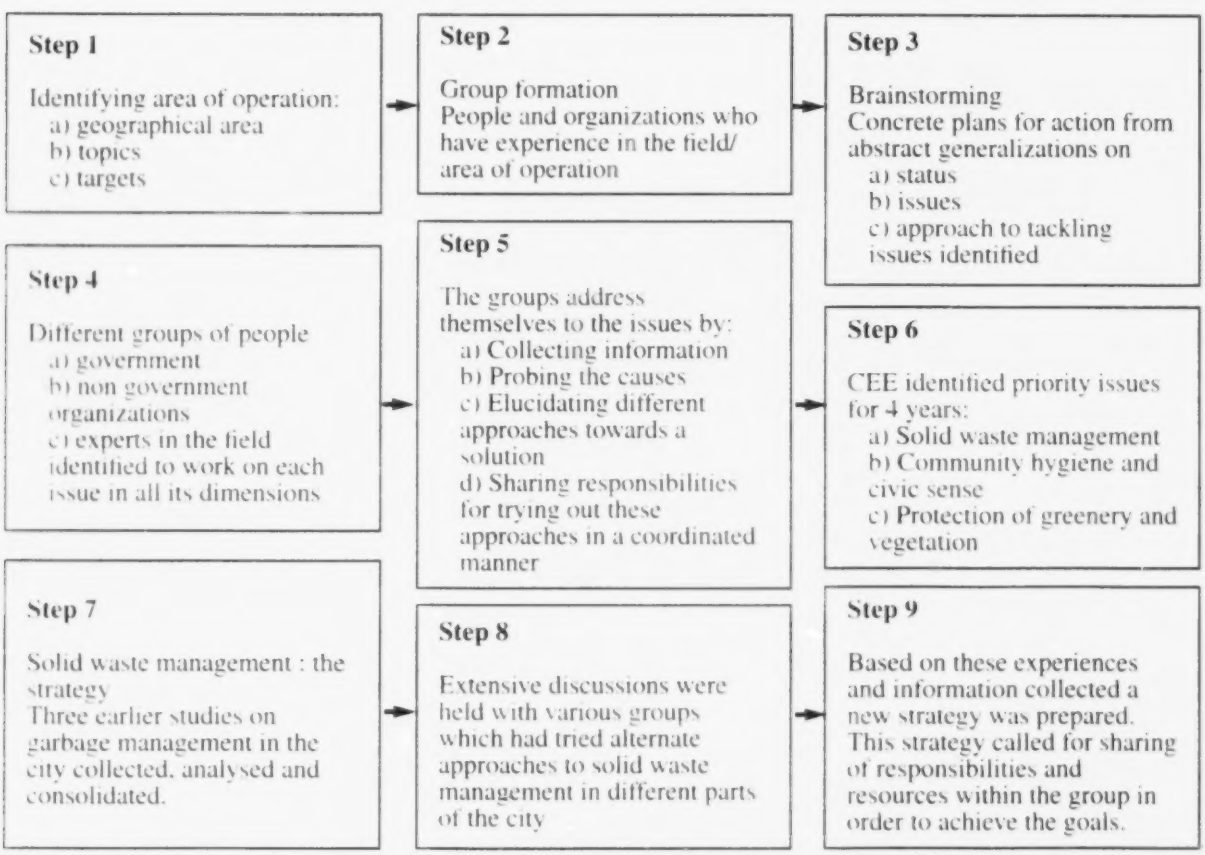
Step 1
Identifying area of operation:
a) geographical area
b) topics
c) targets
Step 2
Group formation
People and organizations who have experience in the field/ area of operation
Step 3
Brainstorming
Concrete plans for action from abstract generalizations on
a) status
b) issues
c) approach to tackling issues identified
Step 4
Different groups of people
a) government
b) non government organizations
c) experts in the field identified to work on each issue in all its dimensions
Step 5
The groups address themselves to the issues by:
a) Collecting information
b) Probing the causes
c) Elucidating different approaches towards a solution
d) Sharing responsibilities for trying out these approaches in a coordinated manner
Step 6
CEE identified priority issues for 4 years:
a) Solid waste management
b) Community hygiene and civic sense
c) Protection of greenery and vegetation
Step 7
Solid waste management : the strategy
Three earlier studies on garbage management in the city collected, analysed and consolidated.
Step 8
Extensive discussions were held with various groups which had tried alternate approaches to solid waste management in different parts of the city
Step 9
Based on these experiences and information collected a new strategy was prepared. This strategy called for sharing of responsibilities and resources within the group in order to achieve the goals.

Figure 1. Evolving a plan of action for protecting the urban environment.

This paper describes CEE South's solid waste management project for the City of Bangalore. This is summarised in figure 2. Of the 2,000 tons of

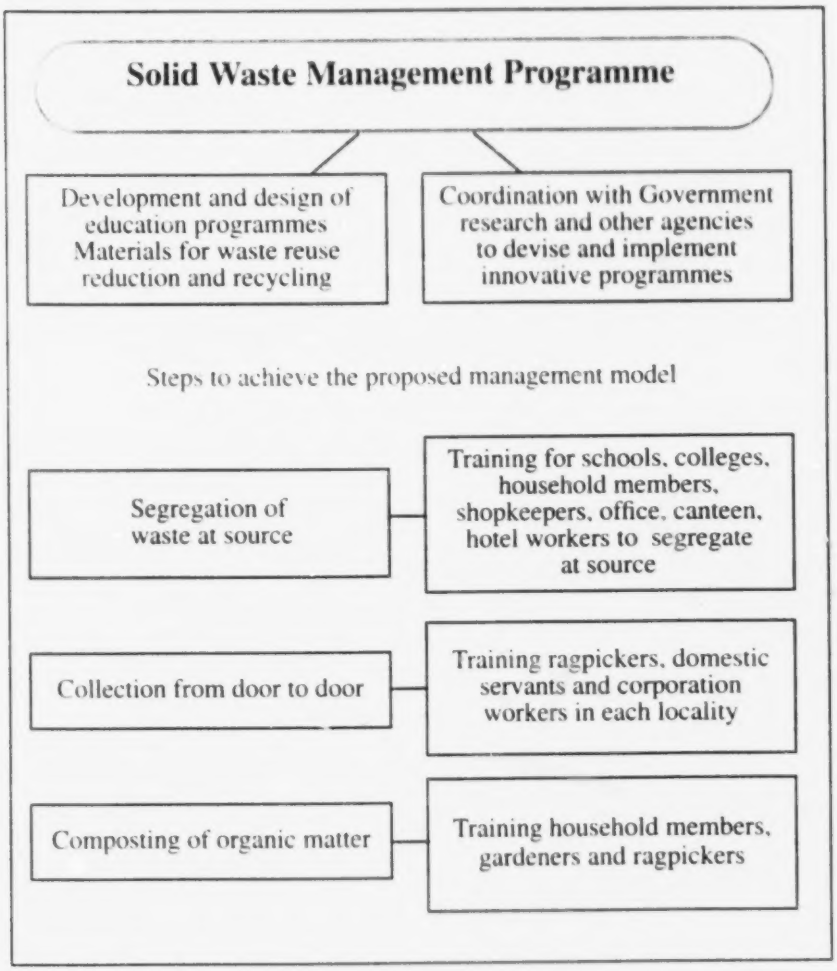
Solid Waste Management Programme
Development and design of education programmes Materials for waste reuse reduction and recycling
Coordination with Government research and other agencies to devise and implement innovative programmes
Steps to achieve the proposed management model
Segregation of waste at source
Training for schools, colleges, household members, shopkeepers, office, canteen, hotel workers to segregate at source
Collection from door to door
Training ragpickers, domestic servants and corporation workers in each locality
Composting of organic matter
Training household members, gardeners and ragpickers

Figure 2. Overview of the solid waste management programme of the Centre for Environment Education.

garbage generated daily in Bangalore, between 340 and 400 tons remain uncollected, and lie in huge heaps, attracting dogs, cats, rodents, kites, and flies and serving as a breeding ground for countless microorganisms. This in spite of the fact that 8,000-9,000 workers are employed by the City Corporation (BCC) and 125 trucks are used to collect and transport garbage to dumpsites on the outskirts. CEE South started work on the garbage problem because neither government nor non-governmental bodies seemed to have solutions and no action was in sight - although much information on the subject was available.

The project started with the compilation of information on the population of

city neighbourhoods, the area of operation (BCC and the Bangalore Development Authority (BDA)), the number and location of dumpsites, road outlets, the amounts of garbage generated and collected, and its transportation.

Information was also collected on the amount of garbage generated by individual households, the types of waste from homes, shops, offices, schools etc., and by segregating and separating waste matter to estimate percentages (between 75 and 80 percent of domestic garbage in India consists of organic matter). The possible effects on human health and the environment of waste matter if disposed directly were examined.

The existing system of disposal, recycling and reprocessing and the roles of rag pickers and waste retrievers were studied. One hundred tons of unsegregated garbage a day are composted aerobically by Bangalore, and there are industries which process rags into paper, and recycle paper, plastics, glass, metal, rubber etc.

Integrated management: a communication strategy

A communication strategy was then worked out for an integrated management plan for waste utilization and disposal. This is summarised in figure 3. The strategy was directed both at officialdom, since they were key to support and setting up infrastructures for the project to work and at the public, through family and school contacts.

An awareness programme directed at the Mayor and members of the Corporation and its officials aimed to obtain the agreement of the authorities to use small parks or other open spaces to develop neighborhood composting sites using the aerobic and vermicomposting techniques.

In parallel, the strategy was directed to orienting interested citizens in composting so that they could oversee neighbourhood operations. An eco-awareness programme was organized for the youth club of a pilot area to mobilize volunteers for the collection of data and for campaigning.

An interview schedule was drawn up to enable volunteers to collect information on the generation of garbage. This information was needed to determine the positioning of different types of garbage bin in various locations and to devise methods of collection, transport and disposal, including the utilization of incinerators and composting plants.

Prototype educational materials (based on the information collected) were prepared, and objectives outlined. Plant nursery techniques, composting and tree planting were included in the subjects covered. Educational modules were prepared for schools and teachers trained in using them. Badges and tree ID cards for tree growing clubs were prepared.

Next came the identification of volunteer communicators for a house-to-house campaign using films, slide shows, posters, pamphlets, activity booklets, stickers and panels bearing good waste habit messages.

Many people in India are already putting away newspapers, milk and other sachets, bottles, broken plastic and metal items which are bought by itinerant waste collectors who pay on the basis of the weight of material collected. As well, ragpickers, usually the most destitute and children, who pick recyclables directly from roadside bins or dumpsites are being trained for house to house collection of organic waste. In return, they receive payment from these households for collecting organic matter, recyclables and soiled waste in a segregated manner. They sell the recyclables to agents or retail traders while the soiled and toxic wastes are thrown into garbage bins provided by the Bangalore City Corporation (BCC) for safe disposal. A system of collection using tricycles and at the same time motivating citizens in monitoring garbage disposal in their area helps to run the programme properly and make it sustainable.

Materials were designed for the training, on the one hand of Corporation workers and street sweepers on the collection of garbage, separation of sanitary and hazardous waste, careful handling and disposal, and the harmfulness of burning, and on the other of rag pickers. The topics for the latter included the collection of recyclable materials from houses, the avoidance of littering, health problems associated with picking from garbage bins, the composting of organic matter and the carrying of garbage bags.

The volunteer communicators were trained to use these materials. A programme schedule and methods of communication were worked out for a wide variety of target groups: shopkeepers, restaurant workers, clinic and hospital employees, domestic servants, housewives, corporation workers, street sweepers, rag pickers, youth and children.

Radio, TV and other media were persuaded to run educational programmes and campaigns. The strategy provided for volunteers from service clubs, voluntary organizations and educational institutions to be trained to conduct programmes in nursery plant raising, planting out and composting. Meanwhile, on the official side, a regular system of collection by category of waste, and transport for composting or incineration was established. There was interaction with farmers close to the city to pick up non-hazardous organic and compostable waste with their own carts, and support was given to the existing informal system of transport of garbage to farmers.

In the campaign, lasting seven to ten days, different teams of volunteers approached the various target groups to convey the importance of the objectives and to motivate the people to act, using the educational materials created for the purpose (posters, brochures, pamphlets, booklets, banners, radio, and TV advertising). A first aim was to establish citizens' forums to supervise the segregation and collection of garbage and to organize litter-free drives.

Feedback on the strategy came from three directions. In the first place, corporation workers and officials commented on the viability and feasibility of the system. (The health supervisor in each district would coordinate and ensure cooperation among the Corporation staff and between them and the

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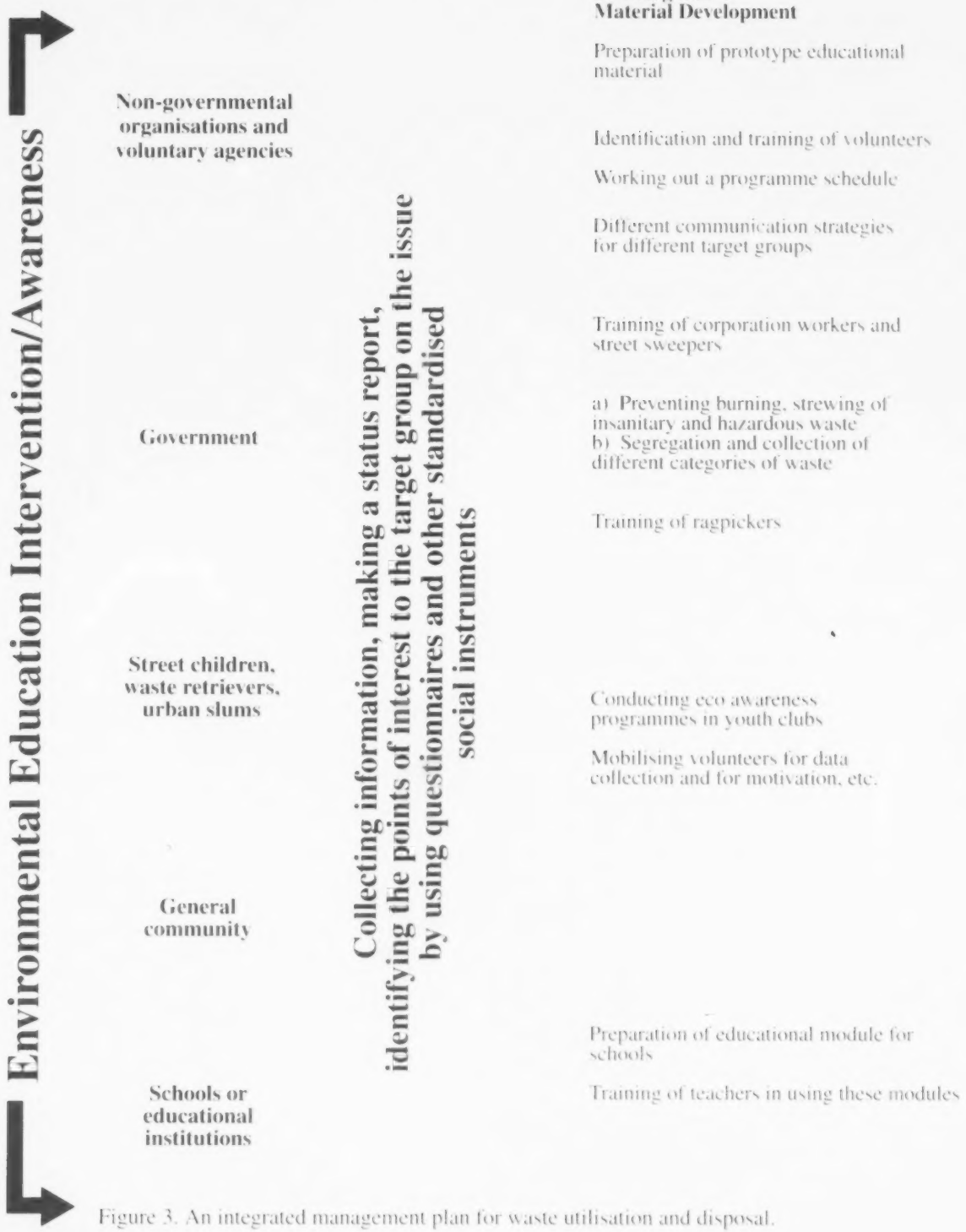
Environmental Education Intervention/Awareness
Non-governmental organisations and voluntary agencies
Government
Street children, waste retrievers, urban slums
General community
Schools or educational institutions
Collecting information, making a status report, identifying the points of interest to the target group on the issue by using questionnaires and other standardised social instruments
Training and Material Development
Preparation of prototype educational material
Identification and training of volunteers
Working out a programme schedule
Different communication strategies for different target groups
Training of corporation workers and street sweepers
a) Preventing burning, strewing of insanitary and hazardous waste
b) Segregation and collection of different categories of waste
Training of ragpickers
Conducting eco awareness programmes in youth clubs
Mobilising volunteers for data collection and for motivation, etc.
Preparation of educational module for schools
Training of teachers in using these modules

Figure 3. An integrated management plan for waste utilisation and disposal.

Action	Feedback	Results
Working out different models for collection, transport and disposal/ utilisation of solid waste		
Setting up a number of pilot projects in different parts of the city		
Establishment of citizens' forums	Feedback from citizens' forums, associations and organisations workingwith street children, ragpickers, etc.	
Establishment of regular system of collection in categories		A standardised system which is suitable for that locality is carried out and followed up by citizens' associations
Establishment of large composting sites with the help of City Corporation for composting of waste from vegetable and fruit market	Feedback from city corporation workers and officials on viability and feasibility of this system	Modified system of collecting segregated waste from houses, shops, restaurants, schools and offices
a) Collecting recyclable material from door to door b) Avoiding health problems related to picking from garbage bins c) Composting organic matter d) Vermicomposting	Feedback from waste retrievers (ragpickers) on their role in this system	
Educational campaigns in schools and colleges and neighbourhoods for motivating children, teachers, youth and the general community to take up action programmes regarding waste segregation, composting and recycling in their localities	Feedback from the community about the difficulties they face regarding segregation of waste and handing over to waste retrievers	
Distribution of educational materials such as posters, pamphlets, films, articles to voluntary organisations and individuals	Feedback from volunteer communicators and the public on effectiveness of educational material and methods	
Sensitisation of radio, television and other media organisations to take up educational programmes and campaigns		
Establishment of composting pits in schools, collection of recyclable materials, crafts and models from waste material and workshops on recycling paper, composting, etc.	Feedback from teachers and children on educational materials and the problems in segregating and composting	Schools and educational institutions include training about waste behaviour in their co-curricular and extra-curricular activities and formulate different action programmes for their localities Modified educational materials and methods

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public, and provide insights for the improvement of the system). Secondly, the volunteer communicators, teachers and school children were expected to comment on the effectiveness or otherwise of educational materials and campaign methods. Finally, the rag pickers and the public at large had views on the feasibility of the system. Youth clubs, associations, educational institutions, citizens' forums and the ragpickers' associations, groups working with street children etc. were all in a position to make valuable suggestions.

The feedback was interpreted to make improvements in the systems of collection and disposal and the pickup of recyclable matter from houses, shops etc., and to modify educational materials and methods.

A feature of the strategy is that standardized systems suitable to a given locality should be established, carried out and followed up by citizens' associations. Schools and other educational institutions should include teaching about waste in their curricula and in extra-curricular activities, and formulate action programmes for their localities. In schools, the creation of composting pits, the collection of recyclable materials, crafts and the making of models using waste materials and workshops on recycling paper, composting etc. have been proposed.

The programme counts on finding sponsors - the citizens themselves, private enterprise, or large service clubs - to procure basic but essential materials such as tricycles, buckets, drums, uniforms, shovels, rakes, and gloves as well as the means to construct composting pits.

CEE South continues to persuade the BCC to create sanitary landfills for the safe disposal of toxic and soiled waste.

"Clean Up Kodagu"

The disposal of non-biodegradable waste in far-flung districts of India creates a special problem. Urbanization in the rural areas has increased consumption and wastage, and plastic, glass and packaging materials are thrown out indiscriminately to lie in heaps on the roadside. Recycling and reprocessing industries are few and far between and waste pickers neglect such areas. The problem is particularly acute where the terrain is hilly, transport expensive and difficult to find.

In the Coorg district of Karnataka, a "Clean Up Kodagu" Committee (Kodagu is the indigenous name for Coorg) was formed, and a strategy worked out to rid the district of non-biodegradable waste, by collection from homes, shops and other businesses. The District Commissioner, the Superintendent of Police, the Deputy Director of Public Instruction (DDPI), the Deputy Conservator of Forests, and other officials and prominent citizens took part in the work of the committee.

School children were asked to collect non-biodegradable waste at home and to bring it to school. Schools and teachers were asked by the DDPI to

cooperate in the project and a room was set aside in each school to store the waste.

CEE South, local environmental groups, and motivated citizens helped teachers and children to identify the kinds of waste to be collected. A local theatre group toured the district performing plays and skits on environmental themes including garbage.

This team effort in schools and clubs consisted of lectures, demonstrations, street plays and the presentation of recycled bags, bins, stickers and posters.

After a month of campaigning, agents were sent out to collect the waste materials, segregate them, and pay the schools accordingly. Schools and children who had done well received prizes and the money was used to start eco-clubs, go for excursions, pay for scholarships and buy books.

In a special three-day campaign, children and their elders took large recycled plastic bags to clean up important tourist and pilgrim sites in the district. In these places, which are severely littered, posters and banners were displayed, pamphlets handed out and plays performed to explain the importance of keeping the district clean - especially of non-biodegradable waste. The surroundings of the schools were also tidied up.

The "Clean Up Kodagu Campaign" was a public campaign which had an excellent media mix. There were lectures, demonstrations, songs, drama and educational materials distributed which had the effect of mobilising the community. "Clean Up Kodagu" was a success not only because it removed 35,000 kg. of solid waste from the district, but also because it generated interest in school children and college students about waste management. It showed that they are curious to know more about the environment and its global implications and that they are willing to contribute to the effort to make their district a cleaner and safer place in which to live. They have a better chance of becoming environmentally conscious adults.

Lessons learned

Before undertaking an educational programme, first study the socio-economic, cultural and environmental situation. Then plan a strategy based on the community needs and aspirations. Implementation is dependent on working out a plan with details of how one is going to communicate. The process is never smooth as it is not possible to anticipate all the difficulties that will arise in working with communities. It is necessary therefore to review the processes and adjust the methodologies to suit each situation. So evaluation should be simple and feed back into the process.

The CAMPFIRE programme in Zimbabwe:
changes of attitudes and practices of rural communities towards natural resources

Taparendava N. Maveneke

Abstract

The CAMPFIRE programme in Zimbabwe is an innovative and adaptive rural development programme which is changing the attitudes of local communities towards their natural resources. Consultative decision-making at the village, ward and district levels through democratically-elected institutions is a basic principle. The programme links environmental management with rural economic development. The selection of local cadres, the major inputs to their training, and the nature of their duties under the programme are local responsibilities. CAMPFIRE started with wildlife resources and is now being diversified to include timber exploitation, fisheries and eco-tourism.

Introduction

The Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) is a rural development programme which is concerned with the conservation and management of wildlife, grazing, forestry and water in Zimbabwe. It offers communities a legitimate means to secure direct financial benefits from the exploitation of natural resources.

This paper explores the operations of CAMPFIRE - particularly in the field of education and training for environmental management - and the effect of its application on the attitudes of rural communities in Zimbabwe towards their natural resources, notably wildlife.

Aims and origins

The four objectives of CAMPFIRE are:

- to obtain the voluntary participation of communities in a flexible programme which offers long-term solutions to problems of resources;
- to introduce a system of group ownership with defined rights of access to natural resources for communities residing in the target areas;
- to provide the institutions needed by resident communities to

manage and exploit resources legitimately for their own direct benefit;

- to provide technical and financial assistance to communities which join the programme to enable them to realize these objectives.

CAMPFIRE traces its origins to an amendment to the Parks and Wildlife Act in 1975 which enabled commercial farmers to exploit wildlife resources on their own properties. The outcome was a positive attitude to wildlife on the farm and a realization of its economic value. Through Project WINDFALL (Wildlife Industry New Development for All), started in 1978, wildlife meat was sold to communal people, and payment of accrued wildlife sales revenues from the Central Treasury to District Councils was envisaged.

These were centralized approaches, without democratic local participation. Not until 1989, and after a concerted debate with the parties concerned and ministerial consultations, was authority given to two District Councils, Guruve and Nyaminyami, to manage their wildlife resources. By 1993, 23 more District Councils had obtained the same authority and had joined the CAMPFIRE programme.

Local responsibilities and benefits

The emphasis is on participation by local people in elected institutions run on democratic lines. The programme makes it possible for residents of a district to carry out censuses of their wildlife resources, set quotas, interview potential safari hunters, and decided on the utilization of CAMPFIRE funds.

Communities receiving cash from their CAMPFIRE programme in Kanyurira Guruve. This open distribution of funds makes the process transparent and publically accountable. Photo: T. Maveneke

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Consultation and decision-making take place at the village, ward and district levels - a process which develops understanding of the importance of wildlife and habitats.

When communities have responsibility for their own natural resources and the freedom to use and benefit from them, there is a need for leadership, both civic and cultural. In cultural terms, CAMPFIRE encourages respect for knowledge handed down from one generation to another. In Zimbabwe, plants of medicinal value, for example, are not cut at random; they are community assets in the same way as figs and other wild fruits which have value as food. CAMPFIRE has links with the traditional leadership to ensure that this wisdom is not lost. Similarly, the knowledge that people of certain totems - elephant, zebra, for example - do not eat the meat of these animals has been used in the interests of sustainable management of wildlife resources.

Local people have been given cash and game meat supplies and projects linked to their specific needs have been created as incentives to participate in the programme. The money raised by safari hunting and more recently from eco-tourism is, for example, returned to the affected communities, as part of the effort to link environmental management with rural economic development. Community projects in various districts have included the provision of a grinding mill, building of a classroom block, supply of a water pumping plant, and establishment of a clinic (see table).

The sharing of impala, buffalo and elephant meat among households in a

Residents of Chikarakwara Ward in Beitbridge are holding a community meeting where women decided to buy a community grinding mill. This benefit mobilised the women to support the CAMPFIRE programme. Photo: T. Maveneke

Table 1. Some example of benefits that accrued to local communities.

District	Year	Amount Z$	Use
Muzarabani	1992	50,000	Drought relief
Chipinge: (Mahenye)	1992	180,000	Household dividends
Hurungwe	1992	464,427	Household dividends
Tsholotsho	1993	1,174,181	Household dividends and community projects
Beitbridge (Chikwarakwara)	1990	85,000	Community grinding mill and classroom block
Rushinga	1990	19,183	Community projects
Guruve: (Kanyurira)	1990	47,000	Household dividends
Tsholotsho	1992	84,113	Water engine and its accessories
Guruve: (Kanyurira)	1992	141,839	Community Clinic
Binga	1993	1,402,080	Household dividends and community projects
Guruve: (Chapoto)	1993	92,600	Household dividends
Guruve: (Chisunga)	1993	199,553	Household dividends
Guruve: (Kanyurira)	1991	56,000	Household dividends
Mudzi	1993	19,189	Household dividends
Hurungwe	1993	906,994	Household dividends and community projects
Guruve: (Kanyurira)	1993	450,000	Household dividends and community projects

community discourages poaching and enhances the spirit of sharing. These moves reflect the idea that the best hope for the long-term conservation of species and eco-systems is found in satisfying legitimate human needs by the sustainable use of natural renewable resources.

In contrast with past practice, CAMPFIRE gives local people the opportunity to make informed decisions on projects to implement. Needs pinpointed in the wards and villages taking part in the programme are seriously considered by District Councils. There is a reciprocal consultation which gives CAMPFIRE educative value: this is a process through which projects that work are promoted and those that do not are discarded.

Training of cadres at village, ward and district levels is an important feature of CAMPFIRE. These cadres - community workers, monitors, problem animal reporters, guards and professional hunters - are elected, and their responsibilities are determined by the local people. Rural development gains from this form of transparency and accountability.

There are training inputs from local people, with outsiders as facilitators. This relationship helps to bridge the gap between trainer and trainees and is mutually reinforcing. Most training has elements of book keeping (basic income/expenditure relationships), project planning and implementation (how to establish priorities, assess risks and benefits), monitoring and evaluation (communities have a better sense of the social aspects than donor or implementing agencies), and meeting procedures.

Partners in CAMPFIRE

CAMPFIRE is an adaptive rural development programme with several partners assuming different responsibilities in the CAMPFIRE Collaborative Group. Zimbabwe Trust is involved in developing institution-building capacities, the Centre for Applied Social Sciences undertakes baseline social surveys and training for monitoring, and the World Wide Fund for Nature carries out ecological surveys. The Department of National Parks and Wildlife Training is concerned with technical and policy training, and the Africa Resources Trust is interested in international linkages. Action Magazine is involved in environmental curriculum development. The Ministry of Local Government, Rural and Urban Development provides basic policy guidelines on rural development through Rural District Councils.

This multi-faceted, multiple-accountable programme in which the drive comes from the rural people and in which outside agencies are catalysts, called for an umbrella organization to link local demands with national and international networks. The CAMPFIRE Association was formed in 1989 and given a secretariat in 1991. The association's CAMPFIRE Newsletter enables local people to disseminate their know-how. Communities send articles for publication in the newsletter, which serves as an effective communication link at all levels. The association encourages research and documentation and represents local communities in Zimbabwe at international meetings.

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CAMPFIRE is now linked with the Southern African Development Community and other international organizations.

The potential role of rural school communities in CAMPFIRE

The school can be a key agency in building awareness and mobilising communities to care for the environment. A school includes more than the building, staff and students, it also includes the parents who live around it. CAMPFIRE is working towards these initiatives.

A major problem for local communities is a lack of capacity for extension services, and school teachers and development associations can assist local communities through skill transfer, such as in improving managerial capacity of tree planting committees, village and ward development committees.

Schools can also become repositories of local knowledge on wildlife and the cultural importance of sacred areas, or species. The ways in which various species are used and managed constitutes "indigenous technical knowledge". This knowledge tended to be denied a value during the colonial period. By collecting and valuing indigenous knowledge, the school can form a repository of information as well as providing recognition of the people's traditions. By creating interest in the collection of information, and using it in educational programmes for the children and the community, the school will contribute to community solidarity.

Schools can also act as information dissmination channels for CAMPFIRE news, Action Magazine and research information. They can contribute to developing understanding of population growth of species, migration and how quotas are set, what is a sustainable hunting level, as well as to resource monitoring.

The school staff, by participating in local institutions and clubs, can help them in their task of environmental awareness. Environmental clubs have been lead agencies in tree planting, woodland management and environmental competitions. Participation by staff will encourage locals to participate too. Teachers also play a role in CAMPFIRE committees; and schools have been the beneficiaries of funds from CAMPFIRE programmes. This has added to the incentives of schools to contribute to anti-poaching lessons. Parents can easily discern the benefits flowing from conserving wildlife for sustainable use.

School communities are critical in identifying appropriate environmental projects in their areas. Through schools, communities have been made receptive to planting local species rather than the exotic gum trees, and using information that woodland management is more cost effective than just tree planting. Schools can also be the means to work towards more community responsibility in waste management, demonstrating composting schemes and their use in gardens. Exchanges between schools and communities in different districts have had a great benefit in building appreciation of environmental assests in various parts of the country. The school establishment can be an important advocate in upgrading environmental

education in the curriculum, and in improving its status by being included in examinations.

Conclusion

Starting with wildlife resources, CAMPFIRE is diversifying into timber exploitation, fisheries and eco-tourism. In each project, sustainable utilization of resources for the benefit of the people is the guiding principle. Cultural tradition and modern formal education are combined to contribute to attitudinal change in CAMPFIRE. The programme is creating confidence in rural development in local communities as well as a positive attitude towards the management of natural resources.

Central to CAMPFIRE is the notion of transfer of power from higher to local levels. The principle of co-management at various levels is therefore encouraged as a means of avoiding the conflict which may arise if some elements are slow to adapt to change.

Some areas still call for attention. Old bureaucratic approaches to rural development within some district councils, for example, have to be unlearned and proper respect accorded by officials to the knowledge of rural people.

Greater decentralization of legal authority is needed as a consequence of the increased role of advocacy by rural people.

Environmental education should cover all elements of society, and CAMPFIRE must now expand to cover on a larger scale other forms of sustainable development such as eco-tourism . Environmental education also calls for the greater use of radio in Zimbabwe.

Lessons learned

The importance of stake holder participation in planning educational programmes:

The CAMPFIRE experience has proved that planning of any educational material for grassroots people must be participatory in nature if it is to be sustainable. Educational planning must be sensitive to cultural perceptions of the people to be targeted.

Finally, the principle of adaptive learning must always be explored as local people's needs are dynamic and planning must encompass this dynamic process.

Further Reading

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IUCN in environmental education in western Africa and the Sahel

Monique Trudel

Abstract

Environmental education in the Sahel and neighbouring countries of western Africa must connect first with traditional knowledge and community needs, and develop from this an understanding of how to deal with problems. School children as agents of change in communities are a principal target for educational activities. Examples of success in changing attitudes and behaviour where the quality of the environment affects survival and health are given. Environmental information, however, is not always the motivation for change of behaviour, and the perception of personal benefit is important. Contributions by Monique Trudel and Raphael Ndiaye offer an overview of environmental education in this region, and present the longstanding IUCN programme. A paper by Ibrahim Thiaw provides an example of how strategies to reduce human pressure on natural resources succeeded by appealing to the dominant interests of local populations.

Introduction

The International Union for the Conservation of Nature (IUCN) has been at work in western Africa for more than 10 years. IUCN has provided help to Mali in implementing a natural resources management policy since 1984. In Niger, IUCN works in the Air Tenere region and, in collaboration with the then World Wildlife Fund (WWF), participated in the creation of the Air and the Tenere Natural Reserve, now a Unesco World Heritage Area.

Since 1988, IUCN has been working on a coastal planning project in Guinea-Bissau (70 percent of the population live on the coast), providing support to government efforts to conserve and make sustainable use of natural resources. IUCN is also involved in the creation of a national park and biosphere reserve in the Bijagos Archipelago.

IUCN aims are to develop useful methods, to promote these methods and to build local capacities for sustainable development through actions and demonstration projects carried out in collaboration with such partners as non-governmental organizations, government departments or bilateral and multilateral cooperation agencies.

The IUCN Sahel programme, implemented in 1988, addresses the

fundamental problems of environmental degradation in some of the poorest countries in the world. There are no simple solutions. It is clear, however, that local populations must be fully involved in the management of their own natural resources in order to reverse the destructive processes inherent in meeting their immediate needs. Education about the environment, in the form of a dynamic dialogue, drawing fully on traditional and modern knowledge, is therefore of primary importance.

Environmental education in western Africa has become a priority not only for IUCN but also for many other organizations - to name several, the national Red Cross societies, ENDA Tiers Monde, and the Environmental Programme for Training and Information (PFIE-CILSS). The networks these organizations have formed to reinforce their action through exchanges, sharing of experience and harmonization have led, logically, to the creation of a large environmental education Sahel network, operating in at least nine countries. This comprehensive network was formed in 1993 at Ouahigouya, Burkina Faso. The aim is to make environmental education an essential instrument of sustainable development. All participants have agreed to exchange their methods, pool their resources and create a space for cooperation.

Accent on the schools

In its regional environmental education programme, IUCN chose to concentrate on school children for several reasons. They will soon be in charge of their countries and will have to manage the heritage passed on by their parents; they are capable of understanding the interactions between different elements of the ecosystem and of handling environment management tools; they are more open to innovations than previous generations; and they have a creative potential and can become involved in practical action to protect the environment.

In the Sahel, young people make up 45 percent of the population. Although school attendance rates are low, students are the ones liable to pass on information, make people aware of environmental issues and the importance of resource management. The IUCN objective is to arouse curiosity, encourage the sharing of information, and promote understanding and thinking so that positive action will be taken towards the environment.

In the short term, the aim is to set up and train a national team that is able to publish a magazine (an early conclusion was that in the particular setting written material was more appropriate than audio-visual means) and provide teaching to school children for better understanding, knowledge and protection of the environment. The next step is to train teachers/communication agents to organize an education programme to raise environmental consciousness.

Longer-term objectives are:

- to have young people participating in the management of natural resources for better development;

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- to apply the programme in all parts of western Africa where IUCN is present;
- to share information and experience among the different partners in environmental education in the region in order to create a Sahelian data bank;
- to develop among the people in each country a sense of belonging to the Sahel as an encouragement to common action;
- to train teachers to pass on their knowledge to the community.

The first project in the Sahel was *Walia*, in Mali, which has become emblematic of the IUCN environmental education programme throughout western Africa. Named after the migratory stork which heralds the arrival of rains and good harvests, *Walia* is an educational programme spearheaded by a 24-page magazine published three times a year. The magazine has a specific readership: secondary school pupils from 13 to 18 years of age. The magazine is carefully and logically planned; subject matter reflects the immediate surroundings of readers and each issue is devoted to a single major topic - wetlands, arid zones, water, trees, etc. Great attention is paid to pupils' and teachers' suggestions. This, plus the familiar form of address, involve directly the reader and create a sense of closeness and a need to react.

When the magazine has been distributed, all schools taking part in the programme receive a follow-up visit from the publishing team to develop the themes and challenge students to speak up and to think about solutions. Students interview key people in the community to collect information, and thus learn more about traditions, tales, legends, environmental management in previous times, and past and present rural practices. Once this information is collected it is possible to start discussions on potential actions. Maps and panels illustrating the current theme are also used to engage students in discussions.These follow-up sessions take place outside the school schedule or during biology classes and students attend of their own free will. (It has been observed that young people taking part regularly in environmental education programmes not only become more involved in community activities, but are also more successful in school).

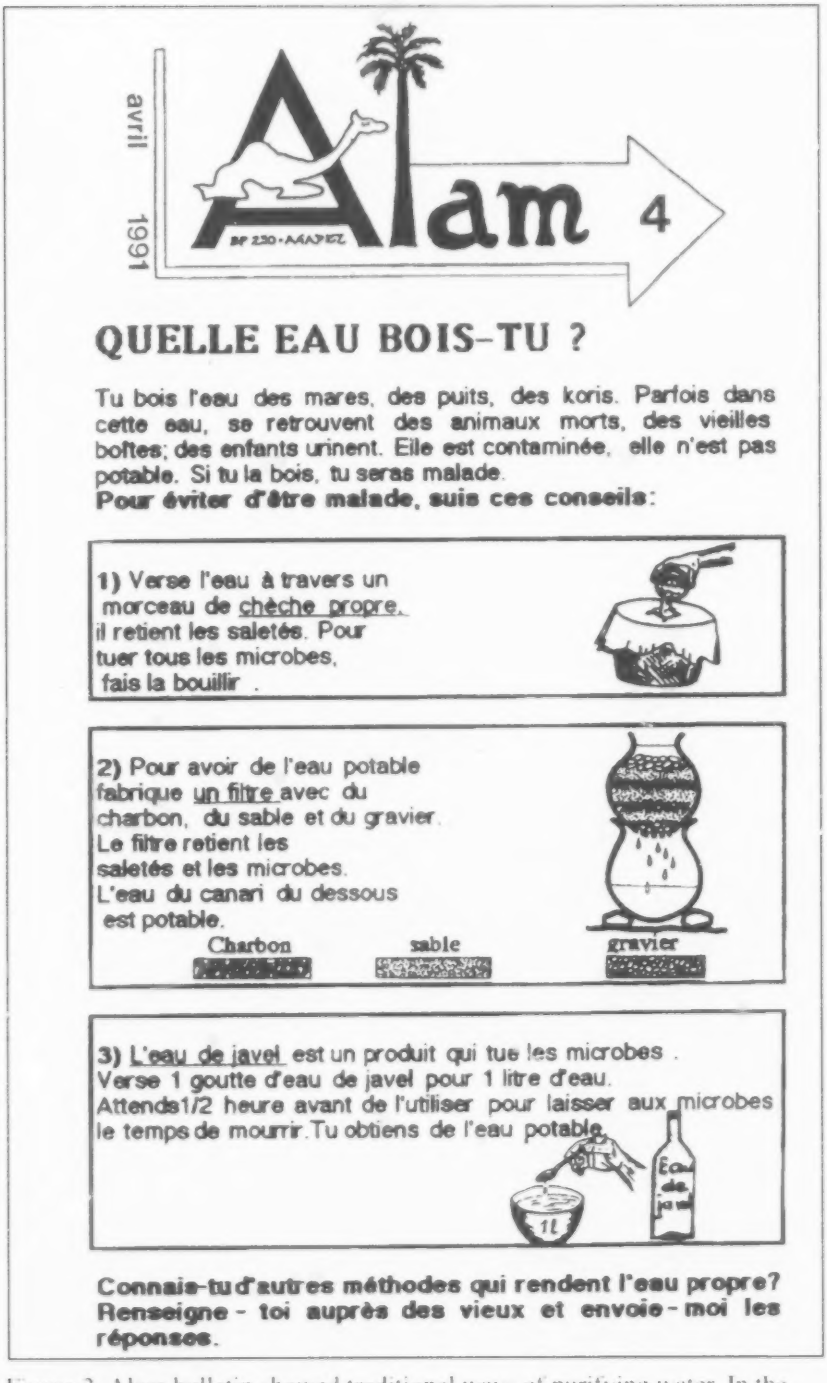
Students are encouraged to make surveys and organize contests. Student surveys, together with letters, help to define topics to be dealt with in future issues of the magazine. The magazine is very often the only written document in a school and becomes a valued teaching aid.

Walia clubs provide young, motivated readers of the magazine with the opportunity to "do something". Teachers help them to find local partners for a practical activity. Guinea worm disease (dracunculiasis) was eradicated in eight villages in the Dogon country of Mali after a campaign by young people on the importance of filtering drinking water. They were supported by the traditional authorities. Another example of youth activity from a village in the Dogon country was the destruction of egg sacs of locusts. Adult

Figure 1. The Walia bulletin produced in a simple A4 folded style developed a theme, such as retaining water in the soil. The text was developed from research in the region, and through the contributions of the students. Illustrated by both the staff and the students.

farmers have become accustomed to the practice and the example has spread to neighbouring villages.

Walia representatives attend the annual national young people's camp which brings together pupils from schools throughout Mali. In 1988, *Walia* organized a conference on the protection of nature. There have been joint programmes with external organizations: the International Council for Bird Preservation, Médecins du Monde, and UNICEF.



avril 1991

Alam 4

BP 230 - AADAPTZ

QUELLE EAU BOIS-TU ?

Tu bois l'eau des mares, des puits, des koris. Parfois dans cette eau, se retrouvent des animaux morts, des vieilles boîtes; des enfants urinent. Elle est contaminée, elle n'est pas potable. Si tu la bois, tu seras malade.
Pour éviter d'être malade, suis ces conseils:

1) Verse l'eau à travers un morceau de chèche propre. Il retient les saletés. Pour tuer tous les microbes, fais la bouillir .

2) Pour avoir de l'eau potable fabrique un filtre avec du charbon, du sable et du gravier. Le filtre retient les saletés et les microbes. L'eau du canari du dessous est potable.

Charbon sable gravier

3) L'eau de javel est un produit qui tue les microbes . Verse 1 goutte d'eau de javel pour 1 litre d'eau. Attends1/2 heure avant de l'utiliser pour laisser aux microbes le temps de mourrir. Tu obtiens de l'eau potable.

1L

Eau de javel

Connais-tu d'autres méthodes qui rendent l'eau propre? Renseigne - toi auprès des vieux et envoie - moi les réponses.

Figure 2. Alam bulletin showed traditional ways of purifying water. In the top illustration students learnt to remove parasites from the water by filtering water through a cloth. Students became active agents for implementing this practice in their villages.

Extending the programme

The experience with *Walia* has provided the know-how necessary to establish environmental education programmes in other west African countries, each with different problems and priorities. In Mali, populations which once migrated according to the seasons and the availability of resources tend to become sedentary. The environmental problems are related to deforestation, over-exploitation of the soil, over-use of pasture land, woodcutting and lack of water.

Alam, the IUCN project for Niger, is implemented in a desert area. Droughts have led to over-exploitation of pasture lands and intensive cutting of firewood. Uranium and coal mining have created new urban centres, and the Paris-Dakar rally has stimulated tourism. There are changes in the organization of society and in behaviour towards the environment; people meet their immediate needs without thinking about the future of natural resources.

In Burkina Faso, the educational IUCN project *ZOONI* was part of a natural resource management programme outside two national parks. The main problems lay in over-exploitation of wildlife, poaching, wood cutting and the use of land for agriculture.

Ekobol, the IUCN/CECI education programme for Senegal, is concerned not with the Sahel, but with the sub-Guinean zone, where the mangrove forest is either in the ultimate stage of deterioration or totally devastated with no possibility of regeneration. The most crucial problem is lack of fresh water.

Capacity to locally produce the IUCN bulletins in the West African - Sahelian countries has been developed through regional workshops. Photo : M. Trudel

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In Guinea-Bissau, *Palmeirinha*, the IUCN education programme aims to safeguard and protect coastal landscapes, develop the rational use of natural resources and discuss with the population the creation of national parks and biosphere reserves. School children in urban areas who are less aware of the use of natural resources but confronted by urban problems are the principal target audience.

PALMEIRINHA 2
Junho de 1993
O MAR Neste número poderás ler algo sobre o tarrafe, a pesca e vários tipos de animais marinhos. Participa no nosso concurso!
Boletim para melhor compreensão do nosso meio natural

Figure 3. Palmeirinha is a bulletin produced in Portuguese for the students in Guinea-Bissau. It is focused on developing awareness and action related to the coastal wetlands.

In all countries, the environmental education programme revolves around the publishing of a magazine (with in most cases the name of a respected animal as title). On the basis of experience in Mali, where the first national team was established, others in neighbouring countries were trained. Regional workshops to share ideas and training methods are arranged twice a year.

The numbers of people directly involved in the programme i.e. school children and teachers, are 7,000 in Mali, 7,000 in Niger, 3,000 in Burkina Faso, 1,000 in Senegal and 10,000 in Guinea-Bissau. It is estimated that in the target areas alone, for each person directly concerned, eight will be indirectly affected.

In addition to activities spreading outwards from schools, local singers, storytellers, mask wearers, puppet-masters and actors, painting and dyeing activities have been used to convey environmental messages in simple

A workshop for a school in how to make marionnettes and masks contributed to reviving skills amongst the young. IUCN has collaborated with marionnette troupes in Mali in making dramas about the environment. Photo: A. Turner.

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language to the rural and functionally illiterate population. These performances trigger discussions, and it has been possible by observation and survey to gauge whether they bring about change. In the Sahel, the topics have included hunting, excessive clearing of lands leading to erosion, and damage to cultivated land by animals.

Organization of the IUCN programme

The Ministries of Environment and Education in each country are the official partners of IUCN in its programmes in western Africa. National teams recruited by IUCN write, publish and distribute the magazines to the school children. Pupils and teachers convey the educational message to the communities. Partnerships between schools, technical departments (health, cattle breeding, agriculture) and the population emerge within communities. Village and religious leaders play an important part in raising consciousness and taking action.

At the regional level, a IUCN adviser is in charge of support, follow-up and the organization of training.

Evaluation

The IUCN programmes have proved to be an original way of approaching school children, making them aware of environmental problems, providing them with the technical knowledge they need for better management of natural resources, and encouraging them to take practical action for the protection of their environment. The programmes:

- serve as demonstrations for future action by governments;
- support the technical government departments which are responsible in the field for raising consciousness and for teaching adult populations in the various development sectors;
- serve as a source of experience for bilateral and multilateral cooperation partners in developing educational programmes;
- provide models for neighbouring countries facing similar environmental problems and willing to adopt the same type of programme.

An assessment of *Walia* recommended in 1990 the extension of the programme to other regions where the environmental balance is in danger.

One conclusion to be drawn from the *Walia* approach is that if the school attendance rate is low, ways have to be found to reach people outside the schools. When programmes are renewed, fresh consciousness-raising techniques have to be found to involve people in environmental conservation. In addition, the fact that *Walia* is extra-curricular leads inevitably to a

demand from teachers for teaching aids and documentation as well as training. Partnership with other organizations involved in the training of teachers may be envisaged.

Experience in Mali has shown that it is possible in environmental education to work in collaboration with associations linked to the social and cultural heritage. The use of traditional means of expression to convey symbolically the environmental message may initiate changes in behaviour and lead to new action. Likewise, in rural areas, youth associations and clubs need to be encouraged, and efforts should be made with the Koranic schools. Radio has been used experimentally, and is a medium with potential for the dissemination of environmental messages.

Conclusion

Development programmes risk failure if they do not take into account the experience of the people they are designed to benefit. It is necessary to listen to the people to understand their behaviour towards natural resources, and the essential factors have to be appreciated before any action is taken.

The importance of environmental education is not to impose a way of thinking, but to clarify and deepen the understanding of people of the environment in which they live and the problems they face, to create a climate in which they will find appropriate solutions through changes of attitude and behaviour, and through the application of simple techniques and practices.

Lessons learned

I learned that for success in EE I have to:

- listen and understand the knowledge, and the priorities of the people;
- involve all the partners from the bottom to the top from the beginning and all through the process;
- take into account the traditional ways of communication, of passing on knowledge, skills, and cultural heritage. EE has to become their programme, their new way of thinking and behaving, they have to be able to reproduce it, to transfer the knowledge and technology in their own words and actions.

Further Reading

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A matter of motivation

Ibrahim Thiaw

Abstract

In Nouakchott, Mauritania, the government promoted an improved model of stove with the aim of reducing the consumption of firewood and, indirectly, of limiting the destruction of forests. The population, particularly in urban centres of Mauritania, regularly experiences a lack of charcoal, which produces social crises. The programme was launched to the satisfaction of the aid agencies concerned and of the government. Did the people who adopted these stoves do so to contribute to a national effort to resist the encroaching desert, or were there more personal or family-linked motivations?

Introduction

The consumption of firewood is a major cause of the destruction of vegetation in Mauritania, a country almost entirely covered by the Sahara. The energy crisis is acute and the price of fuel wood in relation to the standard of living is excessively high. Charcoal is sometimes delivered by truck over 1,000 km., and profit margins may amount to 20 to 35 percent of the retail price.

The felling of trees for agriculture and for energy requirements corresponded to more than 60,000 equivalent hectares of natural wood units in 1990. Almost 70 percent of domestic energy needs were supplied by wood or charcoal according to a 1987 estimate and Nouakchott, the capital, accounted for more than 47 percent of total energy consumption.

It was hardly realistic in spite of the acute energy crisis to expect the population suddenly to abandon a fuel used from time immemorial, so efforts had to be made to improve the use of wood and the quantities necessary for various residential and craft production needs. Later, substitute fuels, such as butane or kero-sene might be introduced progressively, with suitable accompanying measures.

Attention was therefore turned to the design of new stoves adapted to household needs, and to the climate (frequent and unpredictable sandstorms). The prototypes had to be within the capacities of local blacksmiths to reproduce.

Surveys were made of the shape and average size of pots used for cooking, cooking places and conditions and the quantities of charcoal used per day and per week. The first prototypes were placed in selected households which had been using Malagasy stoves. Housewives received details of the

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laboratory tests on the new stoves and were counselled to reduce their consumption of charcoal by 30 to 50 percent.

Three challenges had to be faced: to train enough blacksmiths to make the stoves; to abandon progressively the making of Malagasy stoves; and to persuade consumers to buy the new product. It is a delicate task for a government on the one hand to damp the speculative tendencies of craftsmen who see the chance to make more money from a "new look" stove (the first to adopt the new technology were entitled to a subsidy in the form of raw material) and on the other to stimulate households into buying enough of them to maintain a satisfactory rhythm of production. The average cost price was known and the awareness campaign indicated price ranges for the various models put on the market.

The promotional messages which met the respective requirements of producers and consumers tended to push the prime objective of the project into the background. In fact, it very soon transpired that the main interest of craftsmen and housewives was not to hold back the advance of the desert. Personal calculations were more important. From the housewife's point of view, the new "Maslaha" stoves have many advantages. They use 50 percent less charcoal than the Malagasy stove, save cooking time, and can be used with various sizes of pot. The new stoves are more stable, with less risk that pots will overturn and cause burns, and a ventilation door makes it possible to regulate the fire quickly - a welcome option in a country with strong winds. Savings on fuel enabled housewives to put small sums of money aside.

Different models of the cooking stove promoted to reduce fuel consumption. Cooking is usually done outside. Photo: I.Thiaw

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Conclusion

The conclusion can be drawn that a project to reduce human pressures on nature touched on the subjects that interest families most: their purse, their convenience and their security. As for the craftsmen, they prospered from the launching of a new product. In different ways, the populations of the Sahel are being asked to make enormous efforts in the fight against desertification. They have shown themselves to be sensitive to the slogans and themes of official campaigns whether for reforestation, conservation of the natural environment, or the restoration of lands.

Innumerable one-off voluntary actions have been taken with the encouragement of local leaders or socio-political movements. Many thousands of hectares have been replanted annually by volunteers. To ask people to make lasting efforts - and only those will effectively protect the environment - is, however, unrealistic unless they can find more or less immediate advantage in their action.

The lower the standard of living, the more people are in a hurry to draw benefits. Two conditions are necessary to enlist their support:

- a conservation programme must not be restrictive to the point of limiting their chances of survival or of meeting their basic needs;
- they must feel the threat approaching and be aware that ultimately they will bear the consequences of the degradation of resources.

The problem is the same in all countries, rich and poor. No one invests in short- or long-term actions to preserve the environment without the prospect of ensuring a sufficient revenue to cover vital needs. There are numerous cases where populations, in answering positively the call for protection of the environment, have unspoken thoughts. In the Sahel, this is the case with many water and land conservation projects where, in exchange for their participation, people seek property rights on the land they have helped to develop.

Education and communication support to the establishment of protected area systems

Rutger-Jan Schoen

Abstract

The systematic use of communication is essential not only to the implementation, but also - and often more importantly - to the improvement of policies and programmes designed to promote participation in support of protected areas. Communication is a two-way process in which a combination of the "top-down" approach and a "bottom-upwards" flow of information and data is required in order to make an analysis of the situation, determine the characteristics of the target groups and the problem to be solved and thus arrive at the best mix of policy instruments. The most carefully-conceived laws, incentives and technological facilities will not work if the people directly concerned have not been informed and asked for their opinions. The integration of communication and education instruments in the planning or policy cycle, requires a careful use of the most appropriate methods according to the phase of the cycle. This approach is being taken in an education/communication programme in support of marine conservation in Indonesia.

Introduction

Through a project with WWF (World Wide Fund for Nature) a communication programme sought to build political will and support for marine conservation in Indonesia. It involved developing an effective alliance between education and communication advisors and conservation planners. The project worked on two levels, at the national as well as at the protected area level.

On the national level it was necessary to make government administrative and political officials aware of the need for marine conservation. The actions taken included lobbying with Ministers, paying them visits to inform them of the work and in some cases discussing the consequences of marine degradation on their specific field of interest such as fisheries and tourism. Radio, TV and the press were used to raise general awareness about marine conservation and workshops held to build support amongst the NGOs and professional interest groups, such as the Association of Tourism, Chamber of Commerce.

On the local level the project assisted in strengthening education and communication in established protected areas. Signs were developed around

the parks, communities were engaged in primary environmental care, and visits were made to discuss and inform groups who were affected by zoning proposals in the parks.

From these experiences the project tried to build closer links between communication and the process of establishing a protected area system. Communication will play an instrumental role in achieving the conservation goals and in designing a more realistic protected area system which will have a chance of being implemented. Without communication, protected areas risk being a fact on paper only, designed behind the desk of a conservation planner, and unknown to the people in the field, or even in other agencies.

The challenge of marine conservation in Indonesia

Indonesia is the world's largest archipelago, with a coastline of some 81,000 km. Over-exploitation, pollution, the dynamiting of fish, coral mining and other unsustainable practices are putting heavy pressure on the coastal areas. In an approach to this problem, the Indonesian Government is declaring some of the endangered areas "protected areas". In its fifth Five Year Plan, the government has established a target of 10 million hectares (ha.) of protected marine and seashore areas. By the end of the Sixth Plan in 2000 the intention is to protect 30 million ha. The plans are ambitious, considering that legally established protected areas now cover only 2.5 million ha., without any significant conservation intervention.

The problem is to give support to the creation of protected areas by means of communications, so that the region protected is known about, and has involved people in the process of its gazetting and management planning.

Marine conservation planning process

The establishment of a protected area system is a complicated administrative procedure involving many government institutions at national, regional and local levels. Once a global outlook on the areas to be protected is developed, government agencies also interact with various non-governmental interests at national, regional and local levels to determine the area for conservation. Lack of awareness and conflicts of interest hamper the process, which may take years. Once the park or protected area is selected, boundaries are proposed and the area formally becomes a conservation area by Ministerial decree. Then management plans can be drawn up and hopefully implemented.

The planning cycle to establish parks and protected areas has the following characteristics:

- phase 1 : gazetting and administrative preparatory procedures
- phase 2 : developing a management plan
- phase 3 : implementing the management plan
- phase 4 : maintaining control on the management

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Phase 1: Gazetting and administrative preparation

In this phase a national overview of the important conservation areas is defined. Government agencies need to be notified of conservation interest in the area at the national regional and local levels. These include ministries or departments involved in forestry, tourism, agriculture, mining and energy, regional development, industry, public works, defence and so forth at the national level. In addition regional (there are 27 regions) and local agencies in planning, forestry, and population and environment need to be approached to approve the proposal and support its implementation. As a measure of how much has to be organized and kept track of in this agenda setting exercise, the principle agencies and their roles need to be listed. If the responsibilities of each agency are understood, the benefits of the protected area to that agency can be highlighted in presentations or communication to them. Non government organizations, representing various community interests are also involved in agreeing on the areas to be conserved and to determining acceptable boundaries. Once agreement is obtained and the boundaries defined, the proposed protected area is submitted for ministerial decree.

The role of communication in this process is to inform and consult with all government agencies, by both formal and informal means. At the local level, awareness raising amongst local politicians about the proposal for a protected area can be used to build community support. Other local actors directly involved in the protected area process are provided with simple explanations about the gazetting mission.

The education/ communication activities include personal visits, surveys of local knowledge, attitudes and practices, establishment of contact with NGOs and community-based organizations (CBOs), the distribution of basic information on the environment and protected areas, and regular briefings, interviews and meetings with interest groups.

Phase 2 : Developing a management plan

Once an area has been declared protected, a detailed management plan has to be finalized, in which threats to the area and the aims of conservation are described. The park management, equipped with a detailed analysis of threats and opportunities and a clear picture of groups with a direct or indirect interest is ready to formulate objectives. Instruments to support the conservation of the area such as the provision of subsidies, income-generating sub-programmes, zoning systems and licensing based on environmental impact assessments are developed. The most effective mix of policy instruments has then to be established and local legislation may be required. Community leaders and CBOs have to be involved in the design of a zoning plan. Education/ communication advisors are essential in all these participatory activities.

During this phase surveys of the knowledge, practices and attitudes of the local population and users of the area provide a basis for understanding how

Table 1. Role of communication in phases of Protected Area System Planning. (adapted from Winsemius, 1986)

Park Management Phase	Methods of communication
1: Gazetting & preparation	• personal visits • qualitative knowledge/attitude/practice ('KAP') surveys • establishing contact with NGOs and CBOs • basic information material on environment and • protected areas • regular briefings/interviews and meetings with interest groups
2: Composing management plan	• quantitative knowledge/attitude/practice ('KAP') surveys • integrating communication in the mix of policy instruments • design of communication strategy • informative extension/communication (to disclose issues and policy options) to those who will get involved
3: Implementing management plan	• communication to raise awareness of conservation issues among key-sectors of the local population • informing groups on the use of other management instruments (new legislation, subsidies, alternative technology etc) • ex-ante evaluation through qualitative research
4: Maintaining & control	• public information • regular option/attitude surveys (since age linked target groups slowly will be replaced by younger generations)

to approach different parts of the population through communication. A communication strategy is planned.

Phase 3 : Implementing the management plan

Once the plan is adopted, the mix of instruments - communication, legal and financial - is used to influence practice in relation to the protected area. The communication strategy is implemented. Communication is required to raise awareness amongst the local population about the status of the area, with for example community meetings and interviews. These programmes also inform people about the mix of instruments being applied. Users of the area, need also to know about the area and its management through visitor education programmes. Various materials to support the communication plan are prepared. Signs, appropriate to local literacy levels have to be prepared and erected to indicate where the region is protected and why.

Phase 4: Maintaining and control

Once the protected area management is operational, the effectiveness of the strategies being deployed has to be monitored. Practices and strategies have to be reviewed to take account of changing populations and impacts in the area, or in visitation. Regular opinion surveys help to keep track of such trends. Line agencies, NGOs and community groups may take on responsibility for aspects of the operations. Public information has to be maintained and effective public relations with the protected area constituents.

Conclusion:

This model helps to distinguish the various phases in the protected area planning process. While this is an ideal, it serves to indicate the different forms of education and communication required in the different phases. It is important not to mix up approaches and phases. In the gazetting phase, when a team arrives in an area to assess its potential for protected area status, it is important that the visit is used in a highly consultative way.

In the management planning phase, when zones for use of the area are being prepared, the education/communication specialist can help design a process to maximize participation in building consensus on the plan. Communicators, planners or community groups may be used in managing the process. Then once the plan is adopted, the zoning and use in each has to be communicated to various groups.

Lessons learned from experience in marine conservation.

- Implementation is the challenge.
- Legislation is a prerequisite, but is not the answer to the problem of having an area effectively protected. Management plans and laws are easily made and an area can easily be declared protected; many laws and plans have been formulated, however, without being implemented.
- Communication has to be related to other instruments such as legislation, financial incentives, and technological solutions. Education/communication professionals must take the time to understand the management problems and issues.
- Different phases in environmental or conservation planning call for different communication approaches.
- A communication strategy must be open to modifications. The development of a strategy, refined in the light of practical experience in its implementation, should go hand in hand. Only in this way can communication help planners to make policies of real benefit to people.

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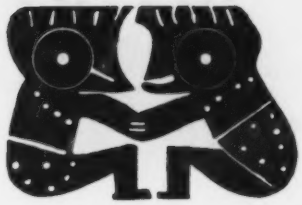


Part 3

From NGO to government strategies: Country experiences

Canada: National Environmental Citizenship Initiative

T. Christine Hogan

Abstract

Canada aims to create a culture of environmental citizenship, in which informed and educated citizens take voluntary action on environmental issues. The educational and community outreach activities of Environment Canada have been organized around this theme. The five mutually-supporting objectives of environmental education are the establishment of an agenda; the development of educational products; partnerships for environmental literacy; specialist training; and intergovernmental cooperation.

Introduction

Canada's Green Plan aims to secure for the present and future generations a safe and healthy environment and a sound and prosperous economy. One specific goal stands out as the key to long-term change: environmentally responsible decision-making at all levels of society.

The underlying reality is that setting right environmental ills in the long term requires cooperation by all sectors. The traditional reliance on regulatory and economic instruments to achieve policy is no longer sufficient. Problems will not be solved by government action alone. Responsible voluntary action by all Canadians - stimulated by information and education - is essential.

The Canadian Government has been encouraging voluntary action for decades, but there has never been such a concerted effort to engage other sectors as now. The time is right. In 1992, 84 percent of Canadians said they believed the environment can only be protected if individuals are ready to make changes in their lifestyles - up from 73 percent six years earlier. Environment Canada staff across the country are helping Canadians to make necessary lifestyle changes; to understand and address environmental concerns themselves.

One aim of Canada's Green Plan is to create a culture of environmental citizenship which demands voluntary action on environmental issues by an informed and educated citizenry. The more Canadians engage in environmental citizenship, the less need there will be for complicated regulatory and economic regimes and the more ownership individuals will have in the decision-making process that affects their daily lives (fig 1).

In a national survey conducted for Environment Canada in 1991, Canadians

Figure 1. Canada's Green Plan will use command and control measures as well as communication and education to stimulate participation by citizens in achieving environmental goals.

revealed that they felt good about their environmental actions and were not overly motivated to take further action. Most considered themselves to be at a median level of "environmental citizenship". When asked what they thought the term "environmental citizenship" meant, one in three believed it meant being aware of and concerned about protecting the environment. For two in ten it meant individual responsibility for the environment, and 10 percent thought of cleaning up or cutting pollution.

Lack of information and confusion were regarded as the two most important barriers to large scale citizen action. The electronic media and people at the community level were seen as the most influential factors in changing environmental behaviour. The survey also revealed that Canadians wanted better, not just more, environmental information.

Aims and objectives

The education activities of the Environmental Citizenship Initiative support two basic aims (fig 2):

- all Canadians should be good environmental citizens: this requires scientifically credible educational resources that support increased environmental literacy;

- communities and organizations should implement sustainable development practices; this requires working collaboratively with partners on environmental training for managers, professionals and others in the workplace.

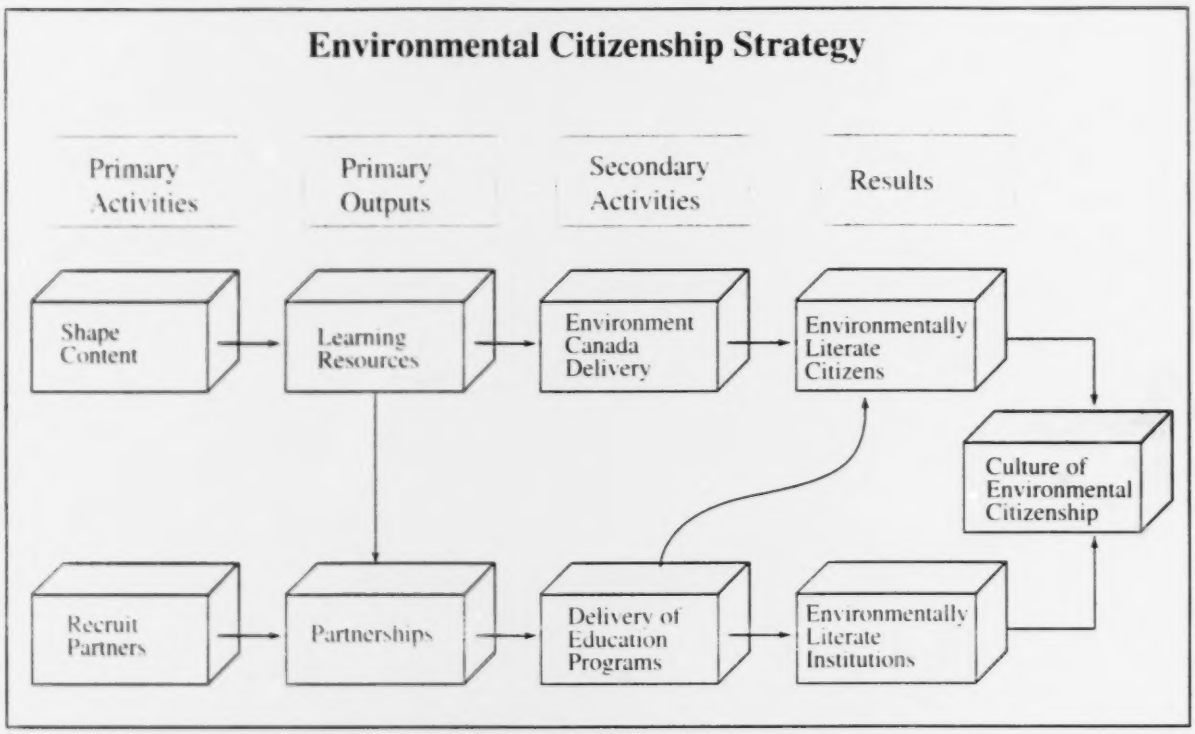


Figure 2. Canada's Environmental Citizenship Strategy.

Five mutually-supporting objectives have been identified to support these aims:

Establish an education agenda

The volume of environmental information and its relevance to daily life is one of the biggest problems confronting environmental educators. They are seeking directions on what to teach. Environment Canada has certain objectives it wants to achieve and it has scientific credibility with educators. In a situation of mutual interest, Environment Canada has created a family of basic resources in the form of primers. An overview primer on environmental citizenship introduces the series and defines a minimum level of environmental literacy that all Canadians could reasonably be expected to achieve; others address themes - global warming, fresh water, ozone depletion, spaces and species, waste management.

The primers, written at grade 8 readability levels, serve as resources for schools, communities and organizations that provide environmental education programmes. They provide information that educators may use to develop products and programmes for specific audiences, and are seen as a means of engaging other federal government departments and provincial governments in a shared environmental education agenda.

Develop secondary education products

The primers contain bodies of information that others will use in developing "retail" education products. Environment Canada also has its own secondary products, formerly issued on an ad hoc basis. They are now required to support the same themes as the primers. There are three kinds of product: fact sheets (for use mainly in high schools and colleges); "idea snapshots" (3-4 pages documents, highly illustrated, on particular environmental ideas such as composting or smog); and "messages" ("bullets" of information addressing important environmental citizenship ideas or actions, accompanied by supporting facts).

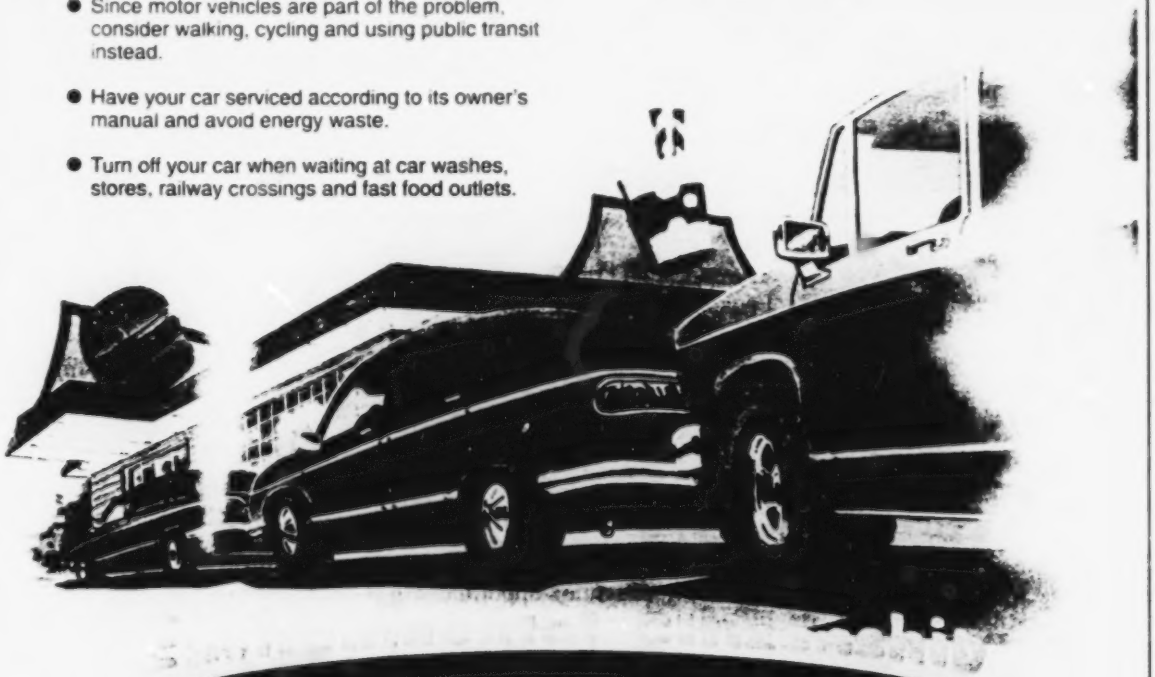
Want to Help?

There's lots we can do on our own to help reduce smog. By improving driving habits and relying less on our cars, we are helping to reduce smog. Global warming and acid rain are other atmospheric problems created, in part, by automobile emissions.

- Since motor vehicles are part of the problem, consider walking, cycling and using public transit instead.
- Have your car serviced according to its owner's manual and avoid energy waste.
- Turn off your car when waiting at car washes, stores, railway crossings and fast food outlets.

Did You Know?

Transport Canada estimates that differences in driving style can lead to a 20 per cent variation in fuel consumption among drivers. Shut off your car engine - even for short stops. One minute of idling uses more fuel than re-starting your engine.



Reducing Smog!

Environmental Citizenship is an initiative of Canada's Green Plan. Its goal is a society where individuals and groups have the knowledge and understanding that will lead to responsible environmental action.

This fact sheet is one of a series of *Environmental Citizenship "Snapshots"* on atmospheric change. The objective of the series is to provide bias-balanced information and practical suggestions for taking action.

For more information, write or call the Environment Canada office nearest you, or:

Enquiry Centre
Environment Canada
Ottawa, Ontario
K1A 0H3

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Partnerships for general environmental literacy

Environmental education is by no means the sole preserve of the formal school system. A study by the Canadian Adult Education Association shows that the major providers of education to adults are (in descending order): employers, community colleges, voluntary organizations, school boards, private schools, universities, unions and professional associations. Partnerships among these groups are needed.

The Association of Community Colleges of Canada (ACCC) is using the environmental citizenship primers as the basis for programmes that could be implemented at more than 700 campuses.

A project focusing on ozone depletion is under way with the KEY (Knowledge of the Environment for Youth) Foundation. In this project, Transport Canada contributed two-thirds of the cost of a special printing of the primer on ozone depletion which has been distributed to teachers across Canada, along with a set of "Keynotes" on the subject. Other partners in this project are Du Pont Canada, the Heating, Refrigerating and Air Conditioning Institute of Canada (HRAI), and Friends of the Earth.

The education programme has created partnerships with the Canadian Nature Foundation (a special edition of its newsletter on spaces and species) and the Canadian Parks Partnership, which now has environmental education in its mission statement and is working in this field with Parks Canada.

Since February 1993 environmental citizenship messages have been disseminated through Environment Canada's network of weather offices to more than 250 media outlets. Through the Environmental Citizenship Messages Program, media access the messages by contacting their local weather office or through subscriptions to national and regional news agency services. The weather service offers a cost-effective and powerful mass communication opportunity to promote environmental citizenship, and the goal is to see whether the messages will become something Canadians look for on a regular basis, just as they do weather reports. The messages are also disseminated by national parks and national historic sites, through the Canadian Environmental Network and other channels.

A sample environmental citizenship message:

> *Tropical rainforests occupy only 6 percent of the Earth's surface, yet contain more than half the world's species. At present deforestation rates, up to one quarter of these species may disappear by 2025. An environmental citizenship message from Environment Canada.*

Partnerships for specialist training

As businesses are the leading providers of education to adult Canadians,

their cooperation is essential to the achievement of an environmental citizenship culture. The primer on ozone depletion is being used by HRAI in training courses for refrigeration technicians. The Canadian Electrical Association has publicly endorsed the idea of environmental citizenship. TransAlta Utilities, in cooperation with the Pembina Institute for Appropriate Development, has devised a staff training programme and a public outreach initiative on environmental citizenship which it hopes will be models for other Canadian organizations.

Incorporating responsible environmental decision-making into the codes of conduct of organizations in, for example, medicine, law and engineering, and into the courses of the institutions which train their professional members is a relatively unexplored field. As an example of what can be done, the Association of Consulting Engineers of Canada has signed a memorandum of understanding to promote environmental citizenship among its members.

Partnerships with government at all levels

At the federal level, Natural Resources Canada is collaborating with Environment Canada on a primer on energy and the environment, and is contributing with Health Canada to the Environmental Citizenship Messages Programme. The Department of Canadian Heritage (Parks Canada) works closely with Environment Canada on spaces and species issues, including the production of a primer on this subject.

In moves to enlist provincial education support, the Council of Ministers of the Environment has set up an educational working group and is developing a resource guide in cooperation with Environment Canada. The secretariat of the Council of Ministers of Education is supporting environmental citizenship as a goal for programmes in the formal education system. Environment Canada has several joint projects with the province of Alberta, and has entered into an agreement with an environmental education society to map a comprehensive environmental citizenship education programme for the province. The education task force of the Clean Air Strategy for Alberta will produce teachers' guides to accompany the primers on global warming and ozone depletion.
Municipalities continue to be active in providing environmental education, particularly on such issues as waste reduction, smog and water conservation. The Federation of Canadian Municipalities has a partnership with Environment Canada to study the practice and promotion of environmental citizenship, while several local bodies, including the regional municipality of Ottawa-Carleton, have entered into partnerships to distribute water conservation messages.

International support for the idea of environmental citizenship stimulates Canada's own initiative and makes possible the pooling of education resources. A trilateral memorandum of understanding between Canada, Mexico and the United States has been concluded. This establishes a basis of cooperation in environmental education.

The United Nations Environment Programme (UNEP) has invited Environment Canada to advise on ways of developing and marketing *global* environmental citizenship. The World Meteorological Organization (WMO) has presented the environmental citizenship messages as a model which may be followed by other meteorological services in developing public education programmes.

Measuring results

The Environmental Citizenship Programme would, ideally, be evaluated by asking people what they know about the environment, what actions they are taking at home, in the workplace, and so on. Such questions, however, elicit responses which reflect a huge number of societal forces; it would not be possible to distinguish Environment Canada's contribution to the effort.

A more realistic approach would be to assess how well the programme is doing in relation to each of its five objectives and whether these objectives contribute effectively to the programme goal.

Conclusion

Environment Canada's education and community outreach activities have been organized around the theme of environmental citizenship. The Environmental Citizenship Initiative was announced in mid-1992. A year later, a core of educational products - primers, "idea snapshots", and messages - had been developed. Strategic alliances had been established and a powerful coalition of national education leaders had come together to support the initiative.

A few fundamentals determine the long-term success of initiatives like the Environmental Citizenship Programme. The first is to ensure that programmes are built on existing strengths, including internal infrastructures such as weather offices or national parks, and on existing networks of partners. These strengths, taken together, allow for the building of a shared agenda. Once the agenda is clarified, a core set of tools, like primers, will be required. Finally, with tools and partners in hand, the reporting and sharing of results - particularly successes - is essential. Behavioural change takes time. It calls for an acknowledgement of your organizations' role in education and then it calls for patience and long-term support.

The Netherlands: Inter-departmental cooperation on environmental education

Peter Bos

Abstract

Seven Ministries in the Netherlands combine their resources in support of a national strategy for environmental education in the formal and non-formal educational sectors. The Concept Plan for environmental education calls for the widest participation of public and corporate organizations and citizens' groups in collective action in the remaining years of the century. The government has an important role to play in creating the necessary conditions, but it is up to non-governmental organizations and institutions to organize educational activities and decide on the precise content of programmes. Good cooperation between government and the non-governmental sector, as well as effective communication between programmes is essential.

Introduction

Civil servants of several Dutch Ministries decided in the 1970s to meet now and then to exchange information on their respective activities in the field of environmental education (EE). They formed the Inter-Ministerial Committee on Environmental Education, which was eventually joined by seven departments.

As an outcome of their meetings, the Minister of Agriculture, Nature Conservation and Fisheries and the Minister of Housing, Planning and Environmental Management presented a memorandum on EE in 1988. The memorandum analyzed the state of EE in the Netherlands, identified bottlenecks, and announced measures for more systematic development. The Dutch Parliament discussed the memorandum with the Ministers and while the general outline received support, the scope of the paper was criticized.

The message was that more money should be invested in EE by more Ministries in relation to more policy areas. In one motion , the Ministers who had presented the memorandum were urged to extend their efforts in the framework of the National Nature Policy Plan and the National Environment Policy Plan; in another, the five other concerned Ministries -

Traffic and Communications, Developmental Aid, Education and Science, Economic Affairs, and Welfare, Culture and Health - were urged to come up with comparable financial efforts and policy.

Laying the foundations

The Multi-year Plan for Environmental Education in Formal Education 1992-95, is the outcome of discussions among these Ministries. It provides a coherent framework indicating which educational activities, with which subjects and target groups can count on financial support. Over four years 70 million Dutch guilders ($US 40 million) are allocated, with contributions from each participating department. Implementation is in the hands of five external managers. The aim of the multiplan is to lay the foundations of EE in all Dutch schools and pave the way for further development up to 2000.

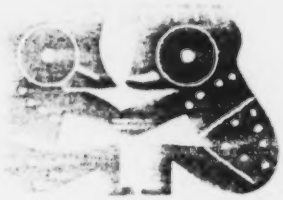
The school is central to the multiplan, and has two key characteristics:

- to integrate EE in school subjects as well as in the way the school is organized and managed. The school becomes a living experience and an example of environmental care and a sustainable system. It becomes an agent of change, as students practise behaviours and see that it is socially desirable to care for the environment;

- schools are independent, and the State does not prescribe curricula; parents and teachers are involved in determining and integrating environmental education and practice in school programmes. The government uses media research and marketing strategies to build public concern for the environment, so that parents and students become a force in demanding more education about the environment. The aim is to support activities at the introductory stage to help schools to accept this responsibility. When schools demand, non-governmental organizations (NGOs) and textbook publishers respond. Government-regulated school examinations then support environmental education (fig. 1).

The multiplan is developed in annual education sector plans, which focus on content and are geared to actual problems in schools. The contributing Ministries are required to examine the educational activities they currently fund and how these contribute to EE.

Hundreds of activities have been funded as a result of communication between the managers of the programme for the primary, secondary, vocational training and agricultural training sectors on the one hand and educational organizations, NGOs and the funding Ministries on the other.



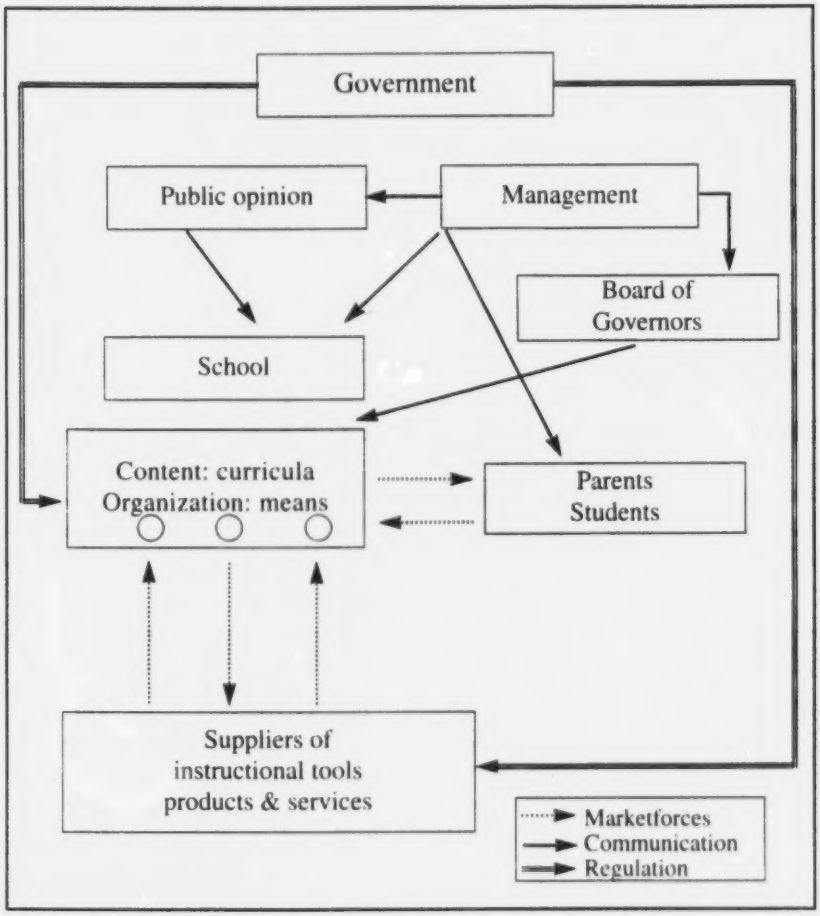


Figure 1. The Netherlands Government strategy for integrating environmental education into formal education.

These projects include cooperation between schools, innovative pilot projects, regional workshops and extra facilities for counselling and advice. Services and materials relate mainly to care for nature and the environment in and around schools.

The approaches in stimulating EE are subject-oriented and school-oriented. In the first case, environmental considerations are being incorporated in existing school subjects. The school-oriented approach aims to integrate environmental matters into school policy, so as to increase pupil participation and the concern of the school as a whole for the environment. Evaluation of the integration process is continuous.

The emphasis is on innovative methods and initiatives, with tailor-made approaches fitting the specific wishes and possibilities of each school.

Seeking a wider commitment

The "Concept Plan for Environmental Education: an extra impulse to make sustainability a second nature", adopted in 1993, is based on the premise that social change demands the widespread commitment of citizens, a change of values and individual attitudes. (The Netherlands Nature Policy plan has been retarded by the lack of commitment and participation by all sectors of society. The message to policy makers is that fundamental change towards a sustainable society will not happen without wide involvement, and that this requires a plan of education and communication to develop motivation, knowledge and participation in the short and long term).

The Concept Plan consequently provides a framework for non-formal EE in sectors such as business enterprises, transport, agriculture and town planning. All the actors in the EE field are to take part in policy development. An independent manager is responsible for the process as outlined in figure 2.

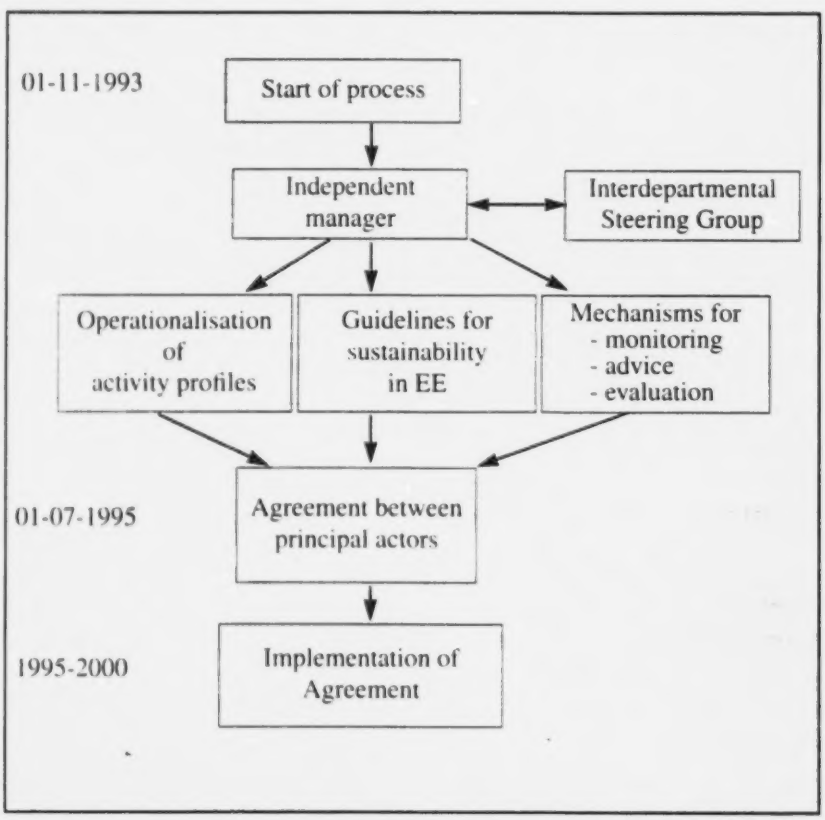


Figure 2. Process management for the general plan for EE: The Netherlands.

A second important aspect of the Concept Plan is the integration of EE into the daily business of the target groups. In-house information and education schemes deal with specific environmental issues that are faced by organizations. EE creates awareness and opportunities for action relevant to the group. To this end, partnerships have to be formed with key intermediaries who can assist in planning, stimulating and delivering EE programmes for public and corporate organizations and citizens' groups. Communications plans need to be set up so that groups involved in EE may profit from the experience of others.

A current example of cooperative action is provided by the Dutch housewives' organization which cooperates with 12 other bodies in a campaign to reduce the use of cars. Others are found in community development of local projects to care for nature and the environment, and in the commitment of a group of development organizations to post-UNCED environment and development activities.

EE will have to focus in the future more on tangible and visible actions, based on practicable targets and recognizable effects, all against a background of achieving sustainability. The emphasis up till now has been more on attitudes and fundamental knowledge.

The overall aim of the Concept Plan is to help individuals and groups with the process of learning about the way the principle of sustainability can be included in individual and collective decisions and activities. This is to be achieved by increasing the rate of success of efforts financed by various Ministries; improving the balance between activities initiated by government and those which start from the grass roots or communities; expanding public participation; improving the coherence of EE activities; and improving the quality of EE.

Structure of environmental education

Four "profiles" provide the structure for an approach to EE which can be used to encourage and monitor initiatives taken by the public and their organizations. These are:

- quality of our direct environment;
- leisure and recreation;
- sustainability at work; and
- consumption and lifestyle.

A wide variety of EE programmes within these "clusters" are funded by the government and operated by NGOs. In the field of "direct environments", for example, there are educational schemes on energy

saving, water consumption, green cities, use of tropical wood, ecological gardening, traffic and parking policies and city farms. Often these schemes are carried out without the target groups being sufficiently informed or their representatives involved at the right moment. This "top-down" approach limits the effectiveness of the programmes.

Three parties are concerned with the planning of EE:

- government (national, provincial, local) - the main providers of funds;
- NGOs - the main suppliers of materials, training courses and information, and organizers of a major part of the programmes;
- target groups in the "activity profiles" (through their intermediaries).

Mechanisms

Public support for the Concept Plan has to be strengthened at all levels and activities from the bottom up have to be encouraged to balance those initiated from the top downwards. An initial conference and a set of strategic conferences are planned on the public support issue.

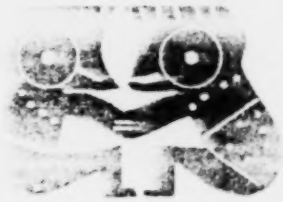
Monitoring will consist mainly of collecting and arranging information on initiatives, in order to assess the chances, successes, failures and overlap of activities.

The nine principles of sustainability (from "Caring for the Earth") are being used as a basis for improving the quality of activities, together with other criteria developed in preparing the Concept Plan.

Concept Plan

Communication under the Concept Plan serves to disseminate information and questions on initiatives to intermediaries, target organizations and governments, and to help the various parties to make contact with one another. Contacts with municipalities and the manner of their involvement call for improvement.

Support consists of providing information which will reinforce action, for example , on aspects of sustainability. Or it may help with methods and techniques of engaging people in participation. With an insight into social action based on reflection and monitoring, governments are able to improve the response to policies they have initiated.



Conclusion

It took two years to produce the strategic plan for formal EE. A major reason for the delay was that the Government's official position was, and to some extent still is, not fully supported by senior decision-makers within the Ministries. Intensive lobbying by NGOs and the threat of a parliamentary motion and intervention by the Prime Minister were needed to arrive at a commitment by six Ministers to earmark funds for a joint investment in formal EE.

The Concept Plan is less of a parliamentary initiative. The need is now felt to redefine the role of government in the development of EE and there is more support at different levels within government departments. The Concept Plan, rather than concentrating responsibilities and budgets in one place, relies on better planning and more cooperation within the existing framework.

The only concern of many Ministries was to gain support for their own programmes, and placing EE on the agenda of decision-makers was difficult. A related issue was the difficulty of explaining what EE is all about. Is it a long-term process which deals with knowledge, concern, skills and behaviour, or simply information dissemination? "Caring for the Earth" supplies the Netherlands with a framework for the content of EE programmes.

Once an EE policy is accepted, it has to relate to other policy instruments. It is important to identify the relationship between a Ministry's educational role and its wider policy framework in support of the environment and in the use of legislative and financial incentives.

The Concept Plan is a valuable instrument in the development of EE because:

- it gives an overall picture of the aims, policies and resources of all those involved;
- it avoids duplication of effort;
- it shows how responsibilities are divided;
- it provides a basis for cooperation and joint effort.

The government has an important role at all levels. It must develop curricula and methods, consultation facilities, research and training. NGOs and other institutions will, however, organize educational activities and decide about the precise content of programmes. Cooperation and communication between the two sectors is essential.

In addition to being key implementers of the strategy, NGOs played an important role in the gestation of the multiplan and the Concept Plan. Environmental organizations and educational institutions involved in EE reinforced their cooperation to improve their lobbying of Parliament and to be prepared for discussions with the government. Joint schemes were proposed dealing with specific themes and target groups, which constituted a survey of possible activities rather than an integrated plan of action.

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Scotland: Developing a national strategy for environmental education

John C.Smyth

Abstract

A Working Group representing a wide range of educational and environmental interests in both the public and private sectors has prepared a report (April, 1993) outlining a strategy for environmental education in Scotland. The group sought to address all the relevant influences on behaviour towards the environment. In making the report, the group cast its net as widely as possible in order to give the chance to contribute to everyone who wished to do so, and to give all concerned a stake in its outcomes. The main implementers of the strategy were consulted during the preparation of the report and after its completion to obtain their views on the practicability of the proposals and to enlist their support. Several initiatives based on the report's recommendations have already been taken. The most important features of a strategy for environmental education are common to many countries and the Scottish experience may serve as a starting point for others.

Introduction

Scotland was already engaged in developing a national strategy for environmental education before the call made at the United Nations Conference on Environment and Development (Rio de Janeiro, 1992) for each nation to develop such a strategy. A strategy for Scotland is appropriate and genuinely national. Scotland has its own Minister of the Environment and most of the government agencies and non-governmental organizations (NGOs) dealing with environmental issues have distinct Scottish identities. Scottish education in schools is quite separate from the system in other parts of the United Kingdom, with its own Minister in the Scottish Office. It differs from the English system in important ways.

A strategy for Scotland has the additional advantage that it deals with a relatively small, compact country which nevertheless has a very varied landscape and land-use pattern, a population with distinctive national characteristics and a culture nurtured by a long and eventful history.

Despite an early start on environmental education, and many activities in the field, environmental education has been fragmented, dependent on voluntary effort and lacking in status. A strategy was seen as a means to start to address these factors and an important basis for making environmental education a significant part of education for everyone.

Initial thinking about the design of a strategy for environmental education came from the IUCN Commission on Education (CEC). The relationships between different groups of people and organizations involved in forming and communicating policies for education are shown in figure 1. This diagram helps to emphasize how important it is that all the players in the field are identified and taken into account in developing policy and a strategy. It is also a reminder of the number filters through which a policy may have to pass on its way to being implemented, each with its own opportunities for selection and interpretation. CEC also shared in stimulating the strategy process through an appropriately timed meeting.

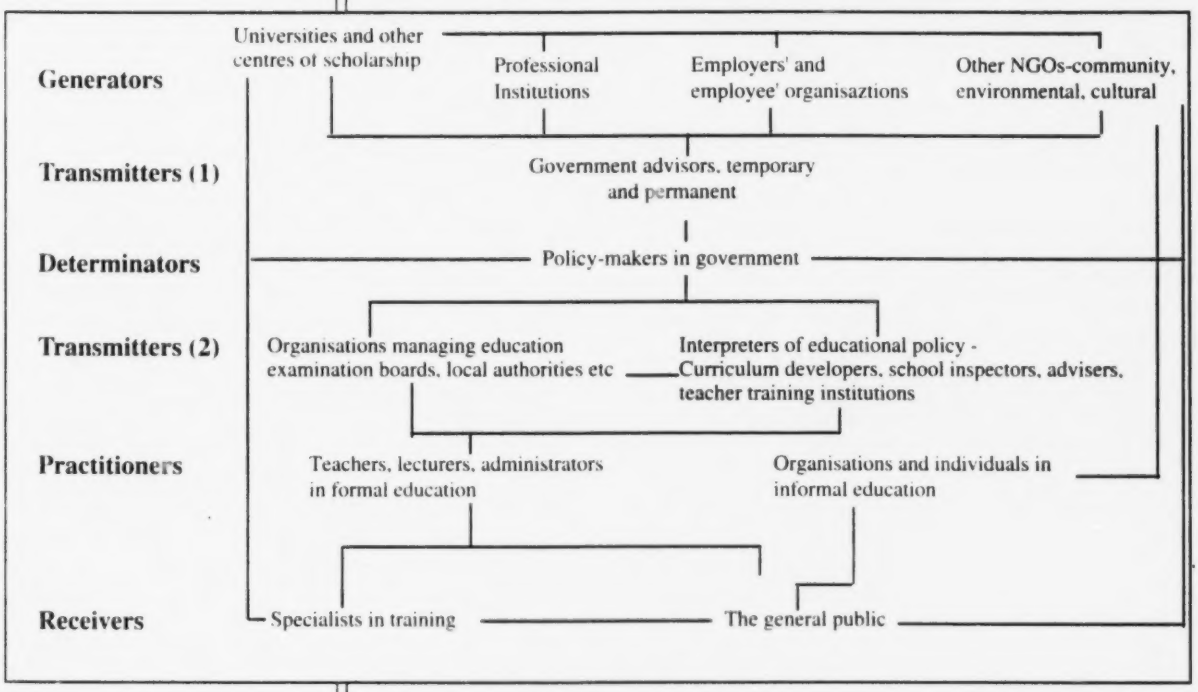

Figure 1. Main two-way connections between groups involved in developing the form and content of education (from Maas Geesteranus and Smyth 1987).

Preparing a strategy

A Working Group was established in 1990 by the Secretary of State for Scotland to produce recommendations for a strategy. The constitution and methods of the working group and its report, presented in April 1993, provide a case study for others facing similar tasks.

The Working Group had 19 members representing a range of educational and environmental interests in both public and private sectors. Its members included representatives of both the Environment and Education Departments of the Scottish Office, but its administration was entrusted to

the Scottish Environmental Education Council (SEEC), a voluntary body, and it was funded by a government agency, the Countryside Commission for Scotland (later amalgamated with the Nature Conservancy Council for Scotland into Scottish National Heritage (SNH)). The Working Group's secretariat had a full-time coordinator.

The terms of reference were to develop proposals to increase environmental awareness and understanding for everyone. In consequence, the Working Group's tasks were:

- To establish a framework for development over the next decade;
- To review and interrelate current activities;
- To identify shortfalls within the existing provisions and the means of overcoming them;
- To develop ways of achieving a more coordinated approach;
- To review the skills and training requirements of those involved;
- To recommend a programme for action and delivery, and systems for monitoring and evaluation.

The internationally-accepted definition of environmental education (adopted at Tbilisi in 1977, and reinforced at Moscow in 1987) served as a basis for the group's work. The group acknowledged that better care for the environment will not be achieved without sustainable development. It was concerned with the whole environment - spatial, social and temporal, built and unbuilt, political, economic and cultural.

The group acknowledged education as a way of guiding behaviour towards a more caring approach (using the principles of sustainable living which form the framework of IUCN's "Caring for the Earth" (1993)). It accepted education as a sustained learning experience for everyone throughout life. Formal education, home and family, community and peer groups, workplace and recreation, public policy and the media are all important and to succeed environmental education must touch them all, and if possible draw them into partnership.

At the outset, members of the Working Group contributed information based on their own experience. The identified range of knowledge and interests to be tackled by the group was so wide, however, that it was decided at an early stage to call in outside assistance. Five lines of action were taken:

- A questionnaire was distributed to a wide range of people and organizations in the public, private and voluntary sectors. The excellent response showed that the group's concerns were widely shared;
- A data base was established to record and analyze the results of the questionnaire and other inquiries and a library of documents and contributed papers was created;
- Consultations were held with key persons in environmental and educational bodies;
- Workshops and seminars on environmental approaches to a range of topics were set up. These included play programmes, youth work,

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community education, planning, the role of professional institutes, rural and urban studies, nature conservation, and leisure activities;

- Participation in workshops and conferences arranged by other bodies, in some cases organized as a means of channelling opinions to the Working Group e.g. on development education and values education.

These initiatives produced a great deal of material and created much interest at a time of change, for example in the structure and functions of major environmental organizations, the school curriculum, the organization and funding of higher education, the environmental sensitivity of business and industry, and the development of environmental charters.
Workshops and seminars were perhaps the most rewarding experience. The participants represented a wide range of interests - from senior civil servants and academic figures to organizers of local play groups and youth organizations. They welcomed the opportunity to discuss shared concerns with people they might never have had the occasion to meet previously. These gatherings established new contacts and generated new initiatives. One of the working group's most useful outcomes might be to provide a mechanism for continuing this form of activity beyond its own lifetime.

The Working Group divided its activities among a number of sub-groups representing the different fields of learning experience through which people pass, rather than a more conventional approach based on the providers of education. This was a rewarding and stimulating initiative. Six of the sub-groups represented respectively : home; community; school; post-school education; workplace; and recreation and leisure. Two more sub-groups dealt with external influences: the media, entertainment and advertising; and policy-makers in national and local government and elsewhere.

Each sub-group was convened by a member of the working group but included outsiders, thus extending the range of expertise and the number of people with a stake in the final conclusions and recommendations. Each sub-group adopted its own way of working, some by enlarging the group, others by setting up interviews and workshops. A set of reports from the sub-groups was presented to a conference attended by many of the interested parties. The discussion of the reports produced much advice helpful in the drafting of the Working Group's final report.

In its final stages the draft report of the Working Group was taken to some of the major bodies in the public and private sectors which would be involved in implementation for comments on its practicability. All were positive and encouraging.

The final report has four main chapters and several annexes. It begins with an introduction to environmental education in Scotland, and continues with a review of current activities by category, for example, national and local government, schools and post-school formal education, industry, the urban and rural sectors, and voluntary organizations. A further chapter assesses present needs and prospects as outlined by the sub-groups in different learning contexts. Recommendations for a strategy occupy the final chapter.

The report was circulated for comment to interested bodies in Scotland. Many replies were received and these will be used in determining the Secretary of State's response. Almost all the replies were supportive and many indicated ways in which the respondents were planning to act on the recommendations in the report.

The main issues

All parties seemed to be concerned by the same issues, giving clear pointers to the areas where action is necessary. The recommendations are too numerous and too closely related to Scottish practice to be described in this paper. The main areas in which action is proposed however convey a universal message and are described below.

Statements of intent

Clear leadership from above is needed with an agreed and authoritative statement of intent from government regarding environmental education to generate and pave the way for further planning. This statement should be applicable to all the fields of learning involved. It should be reflected in statements of policy at other levels, and be the basis for monitoring and audit. The statement of intent should call on those who implement environmental policy to promote environmental competence in their respective fields; promote learning opportunities and responsible action; set an example of environmentally sound practice; and publicize a policy statement on environmental understanding, skills and behaviour.

Partnerships

All agencies and influences that guide behaviour towards the environment should draw together in a common purpose. There is a need for cooperation among many different interests, for coordination within and between the formal and informal sectors of education, between the education system and the needs of employers for environmental competence, and between community interests and others. Influence on those who exert influence outside the normal definition of education is also needed.

Information

There must be better access to reliable information, especially as it relates to local issues on which much environmental education will be based. Information should be accurate, accessible, and easily understandable. It should concern both environmental issues and environmental education and, in addition, development issues which are now poorly integrated. There is a need for a central focal point of entry to specialized information networks.

Continuity

Education programmes should encourage people not only to learn but also to take ownership of their learning, and help them to relate local action to global issues. This may mean giving more education to environmental actors in the field by entrusting them with responsibility for environmental improvement in real situations. It implies dividing tasks into achievable stages that are rewarded by success. Learners should also be involved in monitoring and auditing. A high standard of personal and communal behaviour towards the environment should be encouraged.

Follow-up

One of the report's recommendations is to set up a National Advisory Panel representing all the main sectors concerned, to maintain a continuing collaborative approach. No recommendations on costs or the timetable for implementation were made; the Working Group felt that these considerations would more realistically be a matter for the various sectoral bodies which would handle the first stage of implementation.

Some of the report's recommendations, however, are already being translated into action. The Scottish Office has commissioned research on access to environmental information and on the penetration into environmental awareness of the environmental education message. A joint working group of the Scottish Community Education Council, SNH and SEEC is drafting recommendations on environmental training for community educators and for environmental professionals working in the community. SNH is restructuring its education and training policy. The Scottish Museums Council has staffed and financed an environmental initiative.

The Scottish Consultative Council on the Curriculum and SNH are collaborating on the development of publications for use in schools and on a seminar for providers of environmental resource materials in government agencies and NGOs. With European partners, a consortium of Scottish teacher education institutions and environmental bodies is working on an initiative to make environmental education a part of all initial teacher training. Scottish universities and environmental professionals, under the leadership of SEEC, are working on a summer programme on environmental issues.

Two leading environmental NGOs have created or upgraded education posts.

Postscript

In June 1995, the Rt Hon Ian Lang MP released *A Scottish Strategy for Environmental Education: The Statement of Intent by the Secretary of State for Scotland* in which it was declared that "Learning for Life" is the strategic base upon which he would draw when developing specific policies in which environmental education should have a role.

Conclusion

The important features of an environmental education strategy in one country may well have an application in others. In the case of Scotland, the findings of the Working Group are in close sympathy with those of environmental education strategies in some other countries. The Scottish experience shows that in countries where something similar is being attempted, success may depend on the following factors:

- seizing opportunities. (International and other noteworthy occasions can be used to raise interest and support);
- wide terms of reference;
- a clear definition from the outset of the scope of the words "environment" and "education";
- a wide inter-sectoral approach, involving organizations in both public and private domains;
- making involvement in, and ownership of, the report as wide as possible so as to give everyone a chance to contribute and to have a stake in the outcome;
- division of the work among the different learning contexts, in order to address all the relevant influences;
- consulting the main implementers to make sure that the proposals are practicable and to enlist their support;
- a great deal of hard work on the part of many busy people beyond the call of their normal activities.

A good strategy has been described as one with a long-term outlook and a "marketing" approach, which enlists corporate competence in the development of scarce resources, personal values and ambitions and social obligations. All these points were addressed in the Working Group's report.

Although much remains to be done to clarify the aims of environmental education in relation to those of sustainable living, to address the global issues of standards and the values that these imply, and to translate them into an accessible, workable, educational form, advances along the lines described should make further progress in Scotland more orderly and attainable.

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Spain: Coordination of environmental education

Susana Calvo

Abstract

This article first deals with the present situation of environmental education in Spain and the coordination activities initiated by the government to create a framework which should facilitate the work of environmental educators. The steps taken to build a national strategy for environmental education on the basis of negotiations and the thinking of all concerned parties are then described.

Introduction

Environmental education (EE) in Spain must, by law, be an aspect of school programmes from the primary level upwards. It is a cross-curricular area, with the intention that it should influence the teaching of all subjects in each course. The generalization of EE throughout the educational system requires, however, some encouragement, especially in teacher training.

Since the end of the 1970s, official programmes, activities and equipment have expanded to the point where almost all the administrations of the autonomous communities and many councils have a department of environmental education. Activities are directed towards schoolgoers and visitors to protected areas. The problem is that monitoring and evaluation are not always carried out, with the result that effort is wasted and methods and practices are not improved. The EE departments are isolated and are not used as a working tool in executing organizational policies.

Non-governmental organizations (NGOs) are also substantially engaged in EE activity. Many longstanding youth associations (for example, the Boy Scouts) have included EE in their training activities. Others, including the Spanish Red Cross, have been promoting EE for some time, with considerable support from their members. Ecological associations have an educational function, sometimes related to campaigns on environmental issues. Linking of such voluntary initiatives with State support has been tried, but further study is needed to avoid the uncontrolled distribution of official funds or giving the impression that money is being handed out (or withheld) as a way of rewarding associations (or penalizing them) in the light of their attitude towards the administration's policies and programmes.

Environmental education in Spain today presents a rich and varied picture. The activities are spontaneous and creative, but often sporadic and precarious. Increasing resources and funds - mostly public - are being utilized. A fair distribution of these resources and their extension to cover society as a whole calls for thought and an effort of redefinition.

The growth of EE activities has not been matched by an increase in public participation; nor have citizens developed an interest commensurate with the problems in matters that affect them directly such as water distribution and urban transport.

The environment embraces all human activity and its custody is in the hands of everyone. Global policies must therefore be developed and all sectors involved. A strategy for EE is needed which will make it possible to transmit the necessary knowledge and awareness to different communities and encourage public participation.

Coordination of environmental education

The first Spanish convention on environmental education was held in 1983. It was then acknowledged that EE was a dynamic area, with a wide distribution and variety of initiatives. EE continued to develop without any planning until 1987, when the second convention was held. Participants in the convention agreed on five objectives:

- social awareness and evaluation must be seen from the global perspective;
- EE specialists should set high standards of professionalism and accuracy in their work;
- the role of the administration, as the focus of the global strategy in EE, is not just to solve problems, but also to lay emphasis on the positive values of the environment;
- EE is for the entire population, not only for schoolgoers who have previously been at the centre of attention. Specific programmes should be designed to cover all social groups; and
- a global strategy should set guidelines so that work in EE is not isolated and is based on general principles.

A programme of seminars, directed at professionals in various fields of EE (protected zones, institutional programmes, the education system, and environmental procedures), was established. Over four years, some 100 professionals from institutions and from NGOs have participated in the seminars.

The programme has created a network of relationships which now functions on its own, and which facilitates the work of all concerned. Seminar papers are to be published by the General Office on Environmental Policy which funded attendance at the meetings.

Responsibility for administration of environmental questions rests with the regional governments in Spain. Conventions and seminars have been held at the regional level which have helped to establish the environmental

conservation system as it now stands and which have pointed to the need for more efficient coordination.

Towards a national strategy

Spain is making the institutional arrangements for a national EE strategy as proposed in Agenda 21. EE in Spain is a diverse and complex activity. This fact prompts an approach from different angles, with each environmental agency of the administration becoming responsible for defining its objectives and work programme. The agencies should think of EE as a tool for implementing their policies and not direct their efforts exclusively towards school programmes.

A technical working party is to make a repertory of action being carried out in the field of EE nation-wide, analyze the data collected and prepare a plan for the implementation of an EE strategy for Spain, which takes into account the limits of sustainable development.

Another working party is trying to lay the foundations for EE within regional environmental administration agencies. This working party is also preparing guidelines for cooperation with working groups dealing with EE in the formal education system, and in the fields of health and consumer education.

Work which is being done - or which could be done - in the field of EE by NGOs is being analyzed by a third working party. A paper will be prepared outlining the objectives and strategies NGOs should consider when they implement EE programmes and activities. This paper will be debated at an NGO seminar, and the results will be published.

The forum constituted by the Spanish Commission on Environmental Education of IUCN-The World Conservation Union, in which government and NGO members participate on an equal footing, is also making an input to the creation of an EE strategy for Spain.

Popular participation in the solving of environmental problems in order to achieve sustainable development is the objective of EE. This calls for a process of reflection with the widest possible public participation.

The process of convergence in the working parties to arrive at a national strategy is important because it is in itself educative, and commits the participants to the future evolution of the programme. The objectives of the preparatory work are:

- to achieve by consensus, a flexible statement, containing guidelines for EE within the limits of a project for sustainable development;
- to encourage all social sectors to take part in a common effort to improve relationships with the environment;

- to outline a plan which organizes and arranges priorities in EE activities, now carried out in a sporadic and disorganized manner;
- to promote research into social behaviour and its effects on the environment;
- to rationalize the funding of projects and make the evaluations necessary to ensure that the objectives laid down are achieved;
- to define the social groups for preferred attention.

Difficulties in implementing a strategy

A number of problems arise in trying to implement a strategy of environmental education.

- Conceptual complexity. There is a lack of clarity over a desirable model of relationships with the environment. The concepts "sustainable development" and "healthy environment" are not only new, but also complex. They refer to the relationships we establish with the environment and among ourselves - that is, to essential parts of the predominant cultural model in the society.
- Organizational complexity. There are two problems. One arises from the change from the decentralization of State authority to autonomous regions, and the differences between the environmental and cultural situation in the various regions, which imply that there are different ways of looking at the role of EE. The other is the distribution of responsibility in the administration, which sometimes gives rise to a fragmented view of the environment.
- Need for research. Before making an EE programme, it is necessary to know which social sector is the target, its perception of the environment, its needs and conflicts, in order to adjust activities accordingly and obtain the maximum results. It is also necessary to develop research into the evaluation of activities or programmes to see how the objectives are attained.

Coordination groups in environmental education have agreed on the creation of a common data base which will give an accurate view of the state of EE in Spain. A questionnaire has been drawn up and the collection of information is to be made in 1994.

In the second half of 1994, a document organizing EE in two conceptual parts, the first concerning international agencies and the second consisting of Spanish contributions to conventions, meetings and programmes is to be established.

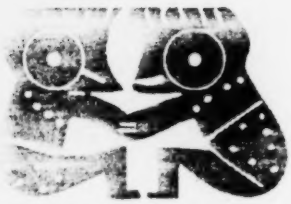
Each of the coordination groups will prepare a draft strategy in the first half of 1995 in line with its own objectives and working methods.

A commission will then draw up a combined working draft of the final strategy in the second half of 1995 and prepare the third Spanish Convention on Environmental Education, at which this document will be discussed.

After the convention, a wider social debate will be needed to bring other groups and institutions into the picture: for example, trade unions, employers' associations, consumer associations etc. and other professionals such as economists and social research workers who have had little involvement so far.

Conclusion

A strategy should set working objectives for all the social services, but to arrive at this point a process of dialogue and convergence is needed, with the participation of the various sectors. The priority objective is a strategy with environmental educators as the prime movers in the process of defining objectives, selecting methodologies and making the necessary evaluations, and subsequently acting as the disseminators of the consensus thus reached.



Australia: Community involvement in conservation of biological diversity

Chris Mobbs

Abstract

The National Landcare Programme in Australia is designed to raise long term productivity and the ecological sustainability of the country's land and water resources. To achieve this goal, the government, the community and individuals at all levels need to understand the nature and value of land resources and to work in partnership. The Save the Bush and One Billion Trees Programmes are two elements of National Landcare, focusing on maintenance of biological diversity. Community groups interested in protecting and restoring native vegetation receive funds. Waterwatch, an environmental education and awareness programme, promotes water quality monitoring. People develop their skills and knowledge, change attitudes to land and water management through involvement in practical conservation.

Introduction

The arrival of Europeans in Australia in 1770 brought about changes that permanently altered the Australian landscape and wildlife at a rate far greater than in the previous 50,000 years. About 100 species of plants and at least 27 species of birds and mammals have disappeared in less than 200 years of European settlement; a further 209 plant species and 59 vertebrates are endangered. Destruction of habitats through extensive clearing of vegetation for agriculture until very recent times is the most significant factor, while changes in fire regimes and overgrazing by exotic animals such as rabbits and sheep and cattle have further degraded the land.

The coastal plain along the eastern and south-western coasts is under great pressure from urban expansion and tourism; by the year 2000, almost 85 per cent of the population will live in urban areas within 30 km. of the ocean. Urban development and vast areas of farmland are now interspersed with remnants of forest and woodlands in thin corridors, in small patches on hilltops or in the corners of fields.

There are habitats that are not adequately protected even in nature conservation reserves which protect many of the most important biological resources and the move towards the development of more ecologically sustainable land use has focused attention on remnant vegetation as the last stronghold for some species. The importance of remnant vegetation lies in

protecting the land against erosion and salinity; providing shade and shelter for stock on farms; maintaining the quality of water in streams; and adding to the aesthetic appeal of the landscape.

The Commonwealth Government established the National Landcare Programme (NLP) in 1989. NLP encourages community groups to manage and conserve land, vegetation, water and biodiversity in their local areas. NLP is made up of five programmes:

- Land and Water Programme (administered by the Department of Primary Industries and Energy);
- Natural Resources Management Strategy (Murray-Darling Basin Commission);
- Save the Bush Programme (Australian Nature Conservation Agency (ANCA);
- One Billion Trees Programme (ANCA).
- Waterwatch Programme (ANCA).

All these programmes are based on the following assumptions:

- nature conservation outside reserves requires that all sectors and age groups of the community take a role in protecting and managing local ecosystems;
- central governments must work with the community to achieve biodiversity goals;
- there is a sense of community ownership of the problems and solutions, especially among landholders;
- ecologically sustainable development and biodiversity must be linked wherever possible; and
- local knowledge, especially of indigenous peoples, should be recognized.

Save the Bush (STB)

The Save the Bush Programme, established in 1989, encourages and supports activities to protect, manage and investigate remnant native vegetation, particularly outside national parks and other reserves. The programme:

- stimulates awareness of the presence and importance of this vegetation as a means of maintaining biological diversity;
- promotes protection and better management of areas of remnant vegetation;
- supports remnant native vegetation conservation programmes;
- encourages the maintenance in perpetuity of representative or unique areas and corridors of native vegetation outside parks and reserves; and

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- encourages governments and communities to protect, investigate, promote and manage remnant native vegetation.

The programme has a staff of 3.5. The budget of some Australian $2.6 million in the fiscal year 1993/94 was allocated to:

- State Governments ($900,000) to develop and implement remnant native vegetation conservation programmes;
- Research projects on ecological processes and the maintenance and management of biodiversity ($250,000);
- Community information, awareness and education, travel and administration ($197,000); and
- Community grants through NLP to local government and community organizations for conservation projects ($1,232,000). These projects include the removal of weeds and exotic animals, fencing to protect vegetation from domestic livestock, training for volunteers, regional surveys, and creation of educational material including local plant identikits and weed removal guides.

A Save the Bush facilitator in each State (employed with the aid of central funds) liaises with community groups, local councils and other government agencies.

One Billion Trees (OBT)

The One Billion Trees Programme (1989) encourages and enables communities to re-establish and maintain Australia's cover of native trees and associated vegetation outside national parks and other reserves where this will help, directly or indirectly, to maintain biological diversity. The aims of the programme are to:

- integrate cost-effective vegetation management and restoration techniques in land-use practice;
- promote and coordinate major vegetation projects to re-establish strategically and maintain Australia's cover of trees and associated vegetation;
- increase the awareness, skills and capacity of the Australian community to assist this process of re-establishment and maintenance; and
- facilitate the establishment and survival of at least one billion trees and associated vegetation by the year 2000.

This $5.4 million (1993/94) programme is handled by Greening Australia Ltd. (GAL) under contract to ANCA. GAL was set up in 1982 as an

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"umbrella" for the many groups, institutions and individuals with an interest in overcoming the decline in trees and land degradation. GAL has over 60 field staff throughout the country who provide expert help to community groups, local councils and government agencies in promoting the aims of the programme.

Projects funded include the planting of indigenous species to create wildlife corridors and habitats, establishment of shelter belts, workshops and demonstrations of tree planting. One Billion Trees trains unemployed men and women in a variety of skills, including bushland regeneration, tree planting and erosion control.

Waterwatch

Waterwatch (1992) is a national community-based water quality monitoring programme administered by ANCA. It is based on two successful programmes - Ribbons of Blue in Western Australia, and Streamwatch in New South Wales - which have been operating for several years. The programme has a staff of one, and a budget of $800,000 (1993/94) rising to $1 million in each of the two following years. In addition, $650,000 was provided in 1993/94 to expand existing programmes or establish new ones in all States.

One of the most important messages of Waterwatch is that everything that happens in a river catchment can have downstream effects and that all communities in a catchment - rural and urban - must work together. Waterwatch aims are to:

- encourage closer links between communities, local government, the private sector and natural resource agencies to create a sense of ownership of the resource, an understanding of water quality problems and general environmental management;
- generate enough community interest in water quality issues for remedial action to be taken by local government, agencies, groups or individuals;
- establish a national network of community-based water quality monitoring programmes and provide the resources for this purpose;
- facilitate cooperation in developing educational/awareness material and school curriculum material;
- encourage national consistency in gathering, reporting, and interpreting water quality data.

Monitoring gives the community a greater understanding of the natural environment, and may lead to action which will have local, regional or even national benefits. A high level of turbidity may, for example, indicate the need to plant more trees in the catchment, while high phosphate levels may

require a reduction in the use of fertilizers, or action to reduce the nutrient load from a sewerage works.

Waterwatch facilitators have been appointed in each State and attached to a lead State Government agency. There are also community-based facilitators at the regional or catchment area levels. Facilitators support community groups carrying out monitoring and help to establish new groups. Groups are funded under the programme where there is a demonstrated commitment to water-quality monitoring.

Schools have been an important target group for water monitoring activities. Once students in Victoria started to talk about salinity problems at home, and maps showing the combined results of school monitoring activities appeared, the problem was out in the open. Prior to this farmers tried to deny the existence of salinity for fear of losing land value. The students provided a lever to bring the community together to address the problem. Photo: C. Mobbs

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Schools are an important target group, as monitoring provides students with real-life opportunities to learn about environmental management. Monitoring can be included in science and other curriculum activities.
Waterwatch brings many sections of a local community together to address an environmental issue which concerns everyone. Groups are encouraged to seek sponsorship from the local council, businesses and service clubs to cover the cost of buying monitoring equipment.

Funds for community groups

There is tremendous interest in the programmes and applications by community groups for funds far exceed the resources available. In 1993/94 only 400 of 1,500 applications submitted under STB and OBT were successful. The maximum grant to a project is $20,000 a year, although the average is around $5,000. Groups are expected to contribute at least one dollar for every two dollars provided by the programmes.

The NLP calls for applications in January. Applications must be submitted by the end of March and are then screened at the regional and State levels. The approved grants are announced by the Commonwealth Environment Minister in July. Facilitators remain in touch with groups executing projects and at the end, a report is submitted, outlining successes and problems encountered,with a financial statement.

Successes and problems

To stimulate community participation the government has a key role in setting an overall strategy, defining priorities, managing funding, back-up support, expertise, information, communication and partnerships with other agencies and NGOs. Some of the successes and problems for the programme are discussed.

Community involvement
NLP has been in operation for only a few years, but it has already developed a conservation ethic in a large cross-section of the Australian public. There are some 1,600 Landcare groups across the country - a fourfold growth since 1989 - with an estimated 39,000 members. The movement is still growing strongly. This enthusiasm in a time of economic recession shows that people want programmes in which they can become involved and do something positive for the environment locally.

Funding
There are many good projects which are not funded because resources are limited. There is the risk that if governments do not provide adequate funds, the unlucky groups will become disillusioned, and not bother to seek support in the future. The principle that groups contribute a dollar for every two they receive, however, means that funds can be stretched further, and helps to develop a sense of "ownership" of the project.

Expertise and information
Back-up in the forms of expertise and information is important. In its early years, STB lacked field staff with expertise in the management of remnant vegetation. The recent funding of STB facilitators should overcome this problem.

In Waterwatch the need for backup support was recognized in the early stages and priority was given to the funding of State and regional facilitators. With this problem resolved, more money will go directly to community groups in future.

Much more information is needed to make management programmes effective at the community level. Many community groups are filling the gap and preparing information for their own region. These "home-grown" materials - for example, a plant identification guide, or an action plan for the removal of exotic plants - are often suitable for groups elsewhere.

Communicating success
ANCA publishes a variety of material including a newsletter which contains articles contributed by groups taking part in the programmes, and case study booklets based on innovative projects. The latter are targeted at specific groups, such as local government, teachers and landholders.

The media are helping to create awareness about the need to protect remnant vegetation, through the publication or broadcasting of stories about people involved in projects funded under the programmes. ANCA has commissioned stories which are offered to rural newspapers about farmers fencing remnant vegetation or planting trees. Suburban newspapers have published stories about urban groups removing weeds from city bushland.

Partnership with NGOs
In a country as large as Australia, one agency cannot alone hope to deliver such a range of programmes; government-NGO cooperation becomes essential. ANCA works closely with many NGOs and other government agencies in preparing education and information material. Two examples: ANCA commissioned the Municipal Conservation Association to prepare and distribute a case study booklet for local government on protecting remnant vegetation; and an educational booklet on remnant vegetation was developed in cooperation with the Gould League, a non-profit environmental education organization.

Target audiences
Some of the most successful projects have been targeted at specific groups. One such project in South Australia aimed at involving rural women in protecting native vegetation. Rural women constitute 50 percent of farm owners in the State and are important as decision makers. The project organized workshops for women to meet and discuss what they could do to protect remnant vegetation and plant trees on farms.

Around 25 percent of land in Australia is owned by or vested in Aboriginal

communities. GAL has employed an Aboriginal whose role is to liaise with these communities to develop projects to protect and restore their lands. The knowledge of the Aboriginal people about land management - particularly fire management - is being shared with land management agencies and other community groups.

One of the most successful projects with schools has been in water quality monitoring. The Streamwatch programme in New South Wales has over 200 schools involved in taking water samples and measuring the biological and chemical characteristics of waterways throughout the State. The information gathered by the schools is used by the water authorities in their management activities. Students in the project bring the issue of water quality to the attention of their parents, and in this way help to change attitudes and gain the attention of local government bodies.

Setting priorities

Where are the areas in greatest need of help in maintaining biological diversity? The question is not easily answered in a country where much is still not known about the fauna and flora. Soliciting applications for grants by means of newspaper advertisements creates the risk of ad hoc funding and there may be a tendency to spread funds as evenly as possible nationwide. As more information becomes available, priorities will be easier to determine.

Waterwatch is more strategic in its approach, expanding on a catchment-by-catchment basis. Because Waterwatch groups require close liaison with State and regional facilitators for training, advice on interpretation of results, feedback and linkages with other groups in the same catchment area, funding has to be directed and expansion undertaken in a planned fashion.

Conclusion

The STB and OBT programmes and two other NLP programmes were reviewed by the Australian House of Representatives Standing Committee on Environment, Recreation and the Arts in 1992. In its report the Committee stated:

"By far the greatest resource is people...Essentially, community groups are on the spot, implementing works on the ground in their local area...The 'grass roots' identification of concerns at a local or district level, the seeking of technical advice, planning of the project, and initiation of action develops a significant sense of community ownership and pride. The Committee believes this to be extremely important and recognizes additional benefits such as increased local community awareness and provision of constructive peer pressure which acts as a catalyst for further action or the formation of other groups. The development of community spirit and of a longer term ethos which carries on to the next generation is also important."

Community-based programmes such as those described in this paper might be considered by other nations concerned to implement Agenda 21 by changing personal attitudes and practices.

Lessons learned

Participation by community groups in projects protecting and enhancing biodiversity is a valuable education tool. Such projects provide opportunities for involvement by people of all ages, enabling education to be a life long activity. A government's key role is to facilitate the involvement of community groups with government and non-government organizations with subject expertise.

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Australia: Education and extension: management's best strategy for the Great Barrier Reef Marine Park

Donald J. Alcock

Abstract

The most important way to manage natural resource areas like the Great Barrier Reef World Heritage Area in Australia is by well-designed education and extension programmes which shape visitor and user attitudes and behaviour. They focus on the area's value and on nature conservation, not by direct teaching but by experience. Education for environmentally sustainable development (ESD) - unlike some other fields of education - must do more than simply increase awareness and understanding. It must develop environmentally responsible attitudes, a commitment to work for change, and a wide range of skills and behaviour successfully to tackle environmental problems.

Introduction

The Great Barrier Reef is the largest system of corals and associated life forms in the world. A marine park within the Great Barrier Reef Region covers about 350,000 km2 on the north-east Australian continental shelf. The Reef stretches for almost 2,000 km along the coast of Queensland in a complex maze of reefs varying in size from less than 1 hectare to more than 100 km2. The Reef is diverse not only in the form and size of its reefs and islands but also in its inhabitants. Six species of turtle are found in the region and it is believed that there are more than 1,500 species of fish. About 350 species of hard coral have been identified and the islands are inhabited or visited by more than 240 species of birds. The Reef is an important breeding ground for dugongs and humpback whales.

Human use of the Reef

Commercial fishing and tourism, recreations including fishing, diving and camping, traditional fishing, scientific research and shipping movements all occur in the Great Barrier Reef Region. Tourism is the largest activity in economic terms. Resorts use the reefs extensively for fishing, snorkeling, water sports, sightseeing and reef walking. Large high-speed catamarans provide day trips to the islands and outer reefs.

Prawning represents about 80 per cent of the total commercial fishing catch

value of the Reef and occupies 950 of the 2,000 licensed fishing boats. There are about 600,000 recreational fishermen in Queensland and many go fishing on the Reef each year.

There is often conflict between the various users of the Reef and the groups which want to see the Reef maintained in its pristine state forever. The sustainable level of exploitation for some purposes such as line fishing and bottom trawling has already been reached in certain parts of the Reef. Run-off from mainland activities containing suspended solutions which include nutrients, pesticides or sewage may be having a high impact on inshore reefs. The development of resorts and marinas is also affecting the coastal ecosystems.

Zoning systems

The Great Barrier Reef Marine Park is not a national park. It is a multiple-use protected area, fitting the classification system used by the International Union for the Conservation of Nature (IUCN). The Reef is also included in the World Heritage List as a natural site.

Zoning is used to separate conflicting activities. Rather like a town plan, zoning provides different levels of protection within the park, ranging from general use zones with almost no restrictions to zones where almost no activities are allowed. The only activities prohibited throughout the park are oil exploration, mining (other than for research), littering, spearfishing with scuba, and catching large specimens of certain fish. The three main categories of zone are:

- General use zones (two types): most activities including commercial and recreational fishing are permitted (bottom trawling is prohibited in one of these two types);
- Marine National Park zones (two types): only scientific, educational and recreational activities;
- Preservation and scientific research zones: no activities other than strictly controlled scientific research.

Special management areas have been created for stock replenishment in particular sites, with detailed and flexible planning.

Most zones are determined for the life of a zoning plan - generally six years. Zoning for the entire park was completed in 1988.

Role of cooperation

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The Great Barrier Reef Marine Park Authority (GBRMPA), in conjunction with other Reef management agencies such as the Queensland Department of Environment and Heritage, uses a range of community education and

extension services to achieve its goal "to provide for the protection, wise use, understanding and enjoyment of the Great Barrier Reef in perpetuity through the care and development of the Great Barrier Marine Park". GBRMPA is recognized internationally as a leader in community education and extension and in public participation programmes for the management of marine areas.

Regular, direct, informal contact by GBRMPA staff with Reef user groups at the local, regional and State levels is strongly emphasized. Several advisory and consultative committees have been established to represent political, economic and cultural interests in the development of the Marine Park. The Great Barrier Reef Consultative Committee provides an example of the cooperative arrangements needed to manage and evaluate activities in the Reef region. This independent committee advises the Federal Minister responsible for the Marine Park about developments in the Reef World Heritage Area. Nominated representatives of scientific, tourism, commercial and recreational fishing, government, and aboriginal groups sit on the committee which also develops communication among the major interest groups.

Regional Marine Park advisory groups have been established along the Queensland coast to stimulate communication among government agencies, NGOs and interest groups about a range of issues including water quality, the effects of fishing, coastal development and local management plans. The advisory groups stimulate public debate and provide a meeting ground for conflicting interests as, for example, between commercial fishermen and conservationists. One regional committee recently initiated a 3-4 year closure of a reef to replenish fish stocks.

As more local groups become involved in management, there is less need for government regulation, expenditure and enforcement. Cooperation with voluntary conservation organizations is important. The most influential bodies - the Australian Conservation Foundation (ACF), the Australian Wilderness Society, the World Wildlife Fund (WWF) and Greenpeace Australia - have played a major role in raising the level of awareness and action over marine and coastal issues. Since the 1970s a number of smaller, single-issue groups have emerged. They also facilitate the involvement of the Australian community in conservation issues and lobby governments. Natural resource agencies can make good use of the networks and the energy and commitment of these groups, which produce magazines, newsletters, books, videos and brochures for educational purposes.

Mutually beneficial relations with tourist organizations and commercial "extractive" users are vital. Cooperation with these groups is needed if regulations, management plans and education programmes are to achieve their objectives.

Public participation

The Marine Park is managed primarily through the community's understanding and acceptance of zoning and other management

practices.The GBRMPA education and information programme provides or arranges for the provision of educational, advisory and informational services which will ensure public participation.

All GBRMPA staff are regarded as extension agents, and there is an education and information service (15 specialist staff) disseminating information and providing a range of community education and extension services. The Great Barrier Reef Aquarium, with a specialist staff and over 100 volunteer guides is the major educational facility, helping to shape the attitudes of visitors and behaviour towards conservation and protection of the Reef.

Zoning information kits contain interpretative maps of the entire region which are sold by many outlets throughout Queensland. These maps explain how zoning affects fishing, collecting, camping, research and tourism.

Public participation programmes make extensive use of the media, public meetings, liaison with user groups, displays and advertising as a means of associating community groups with the development of zoning and management plans. Every effort is made to resolve problems through consultation, and "focus group" social market research is used to balance quantitative responses.

A zoning plan may take up to two years to plan and develop with the help of public involvement. Two three-month periods of public participation are arranged for each new plan.

GBRMPA believes that if people help to develop management plans for the Reef they will be more committed to its conservation. An educated community becomes a caring and concerned community which will voluntarily form a marine conservation group. (In 1993, when the Low Isles lighthouse was automated and the keeper's position became redundant, the local Port Douglas/Mosman community formed the Low Isles Protection Society and successfully lobbied the federal government to buy the lease. The society co-manages the coral cay and provides voluntary assistance and transport of supplies valued at about $100,000 a year - half the cost of keeping a full-time ranger. Local enthusiasts are being trained in reef interpretation and conservation).

Many sectors of the community were consulted in developing a 25-year strategic plan for the future of the World Heritage Area. The plan - first of its kind in the world - establishes the directions to be taken in conserving the Reef's natural resources while adhering to the principles of ecologically sustainable use into the 21st century. It is influencing the planning of government, private and voluntary agencies.

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A particular effort is made by GBRMPA in extension work with the large user groups, such as commercial and recreational fishing, aboriginal communities or the tourist industry. Fishing industry consultants assist the Authority in liaison and joint projects such as mapping, establishment of advisory committees and training workshops for Marine Park field staff.

Many community organizations receive support from GBRMPA in developing educational materials or projects about the Marine Park.

Educational resources

Books, maps, posters, videos, research publications and brochures produced by GBRMPA are in great demand from educational institutions, tourist operators, private publishers and others seeking information on the Reef. Many of these productions have received national awards for their quality. Nearly all publications are on sale.

Television advertising on regional networks has been a successful way of raising awareness about conservation and management. A series of five 30-second TV commercials targeting recreational anglers with messages about zoning, and the effects of overfishing, pollution, and anchor damage was run in conjunction with seminars, direct mail advertising with boat owners, local newspaper editorials and school activities for the national "Seaweek" in 1990. An evaluation rated this campaign as highly successful.

"Deckhand", a video programme to inform and communicate with over 500 licensed commercial fishermen on issues affecting their industry in the Marine Park, has been co-sponsored by government agencies, suppliers of marine equipment and industry and has received considerable support from fishermen. The video communication concept is a cost-effective method to reach any target audience.

The Reef is high on the list of environmental education topics in Australian schools, and its popularity has led to the production of special curriculum resource materials for geography, science and social studies classes.

"Project Reef Ed" is a multi-disciplinary, activity-based reference book for senior teachers. Developed by GBRMPA, this book has been widely distributed in secondary schools. Almost 2,000 copies have been sold. Designed by a team of educators, the book proposes over 150 field or classroom activities for students. Working with leading environmental educators, GBRMPA staff conduct teacher training workshops, advise State and regional education departments about Reef studies and sponsor many school-based projects, including site monitoring, and "adopt-a-beach" conservation projects. Prospective sponsors are encouraged to support dance and drama performances about the marine environment which appeal to young people.

The Department of Environment and Heritage provides information on the Reef through its network of regional offices and interpretative centres. Marine Park rangers maintain a high level of public contact. Interpretative centres at Cardwell, Airlie Beach and Heron Island attract thousands of people wanting to learn about the Reef and the need for conservation. Interpretative displays and educational programmes have been created for visitors at tourist resorts such as Lady Elliott Island, Heron Island and Daydream Island.

Tourist training

Research shows that the tourist industry has a significant role in creating positive attitudes to the Australian environment. Direct contact in natural settings has the most influence in shaping public attitudes, and has a greater impact, according to a study, than television, films, books or legislation.

Over 1,500 tourist operators have attended training courses on the Reef run jointly by the Authority and the Queensland Department of the Environment since 1987. A five month certificate-level higher education study programme is now being offered to raise the professionalism of tour guides working on the Reef, and in other Queensland national parks or World Heritage Areas. The modular, employment-based *Heritage and Interpretive Tourism-Course* has been developed by the tourist industry, natural resource management agencies and educational institutions to train a pool of accredited guide staff in various eco-tourism operations.

Wilderness, natural history, adventure holidays with a high degree of environmental interpretation are now major attractions, and tourist and travel companies need qualified and experienced guides in these fields. Many companies are becoming Reef interpretation specialists, often in association with tourist resorts or charter boats, and provide marine biologists to inform visitors.

An important element in managing the impact of tourism is to educate visitors to appreciate the environment and exercise care. Research into the impact of tourism has covered a number of topics, including the effects of reef walking and shell collecting, as well as public attitudes to off-shore development. In 1988, a survey of visitors showed that 77 percent of the people interviewed were opposed to further commercial development.

"User pays"

Commercial operators in the Marine Park pay charges. Under an equitable, self-administered system, the environmental management charge works out at about $1 per visitor per day. The revenue - $1 million a year - is earmarked for educational and research programmes for the ecologically sustainable development of the Reef. The Cooperative Research Centre (CRC) has been created to manage the funds and the tourist industry is represented on its board. CRC also has an extension programme and one of its first projects offered a course to scuba divers (200,000 visit the area each year).

Great Barrier Reef Aquarium

Since 1987, the Great Barrier Reef Aquarium in Townsville has provided hundreds of thousands of Australians and overseas visitors with a fascinating and realistic "on land" reef experience. A schools' programme at the aquarium offers teacher training and student study projects. At the outset,

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private sponsors provided more than $1 million to create the aquarium displays.

A training programme for guides and other volunteers is provided by the aquarium. Other courses, such as an introduction to marine biology are open to the public. The aquarium demonstrates that innovative government management can contribute to the development of a sustainable tourist industry.

Influence of television

Public demand for information on environmental matters, and the awareness by the media of the work and aims of GBRMPA have led to increased coverage of the Reef and the activities which surround it by press, radio and television. Authority staff assist film crews making documentaries on the Reef and ensure that the management messages find their place. A national research study claims that television is the main source of information about the environment in Australia, via news, current affairs, nature documentaries and popular science programmes. Among high school students, the classroom is cited as the second most frequently mentioned source of information, after television.

Education as an instrument of policy

An education/ extension programme must be designed to suit the policy objectives. Many approaches and tools are used. On the one hand there is public demand for information about what the organisation is doing and its regulations. Public opinion, built through public relations and education programmes, is also important to government decision making and the allocation of resources for conservation.

The cost of a well-designed education and extension programme is offset by a reduction in expenditure on enforcement. Positive community education programmes cost less than legal prosecution for infringements of the regulations or repair to damaged coral reefs. Some managers have suggested that for 2% of the cost of fisheries enforcement, the same results are achievable using public education programmes. Enforcement and surveillance are expensive, but their impacts are immediate and easily measured, resulting in support by management, while the benefits of education programmes are often only realized long after implementation. For some people, the use of education alone is insufficient and the integration of education and enforcement programmes is a required strategy.

In an awareness campaign, regular Marine Park users need to be told what activities are permitted, where they can exercise them and how their actions will affect the environment. They need to know the reasons why some activities are permitted and others not allowed.

To move people to action, social marketing strategies are required. These

need to be based on research, segmenting the audience according to interests and motivation, setting measurable objectives and using effective media to reach those groups.

The tourist industry has to be convinced of the need for long-term strategic applied research as a basis for future developments, and commercial operators need to see what benefits they are obtaining from the payment for permits to work in protected natural areas.

The challenge for the natural resource management agencies is to design the right marketing "mix" of communication, education and extension strategies to influence and lead their client groups and audiences. In additon to the above these include social research and evaluation, joint agency support for educational campaigns, liaison meetings with public lobby groups, face to face informal contact, and producing educational materials.

GBRMPA is now recognized internationally for its use of information and education as a tool in managing marine protected areas. The strategy has marshalled strong public support for the marine park concept, and high levels of public participation and cooperation in developing zoning plans. The Authority's education and information programme must continue to adapt its services to meet the needs of Marine Park users in the light of tourist developments, environmental impact assessments, "user pays" applications, and water quality issues.

Lessons learned

Never give up making research results known to industry and the public, never give up building communication goals as an integral part of management planning, never give up with extensive public outreach and community participation programmes... persistence pays off in the long run.

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Nepal: Environmental education and awareness as elements of the National Conservation Strategy

Badri Dev Pande

Abstract

A National Conservation Strategy was adopted by the Government of Nepal in 1988. In the project to implement the strategy, the environmental education programme has assisted the education authorities in preparing and testing classroom materials that incorporate environmental elements in existing and new courses for primary and secondary schools. The programme has also helped to organize conferences to elaborate national policy, teacher training activities, the preparation of curricula and textbooks, and the inclusion of environmental education in the training of extension workers. Collaboration with non-governmental organizations and a variety of awareness-raising initiatives have proved valuable.

Introduction

Nepal was one of the first countries to adopt the World Conservation Strategy recommendation to prepare a National Conservation Strategy (NCS). The NCS was completed in 1987 after nearly three years of work and endorsed as a policy by the government in 1988. Environmental education (EE) is a key element of the strategy and from the outset has been promoted by the Environmental Education Programme (EEP) of the NCS Implementation Project.

Government support continues in the face of seriously deteriorating environmental conditions in the country. The Eighth Five-year Plan (1992-97) includes a provision for EE at all levels of formal education, technical education, teacher training, non-formal adult education and in-service programmes. The National Education Commission has identified instruction in the prudent use of natural resources and in conservation of the national heritage as a responsibility of the education system.

The Five-year Plan also stresses the need to use mass media to raise public awareness of the issues. A newly-formed Environment Protection Council headed by the Prime Minister can issue directives to government agencies and encourage the private sector in promotion of these goals. IUCN assists the National Planning Commission and its Environment and Resource Conservation Division to coordinate NCS implementation, including EE and awareness-raising, now under way at many levels.

Taking advantage of these positive policies of the government towards EE,

the EEP has collaborated with the Ministry of Education, Culture and Social Welfare (MECSW) and other government agencies to strengthen greatly the contribution of EE in attacking the nation's environmental problems.

As a first step, a review undertaken by the EEP of curricula, textbooks and associated materials relating to formal and non-formal education programmes revealed that all contained some elements of environmental concern, but were inadequate to inculcate in students the attitudes and actions necessary to prevent further deterioration of the environment and to bring about its improvement. This information was reviewed at a national conference, which was used to plan the actions to be taken.

Environmental education for primary schools

In collaboration with the Basic and Primary Education Project of MECSW, EE curricula for incorporation in four subjects (Nepali language, social studies, health education and science) were prepared. Based on these curricula, pilot texts were written by subject specialists from MECSW (Figure 1). In addition, teachers' directives, teachers' workbooks, a supplementary reader, and environmental games and posters on Nepal's animals, birds, plants and trees were prepared. These materials were tested in 1992 in primary grades (1 - 5) in 10 schools in different geographic locations. The test was preceded by a two-week intensive training programme for participating teachers and followed by an evaluation workshop.

Based on the findings of these tests, MECSW is now in the process of revising primary education curricula and textbooks. The materials prepared by the NCS Implementation Project are being integrated into the revised curricula and textbooks. These materials are also being used as EE reference sources by governmental and non-governmental organizations.

Environmental education for secondary schools

A new course entitled "population and environmental education" will be introduced in grades 6 -8 towards the end of 1994. Another new course, "science and environmental education" will be introduced in grades 9 and 10. Likewise, students will be able to choose environmental education as an optional subject in grades 9 and 10.

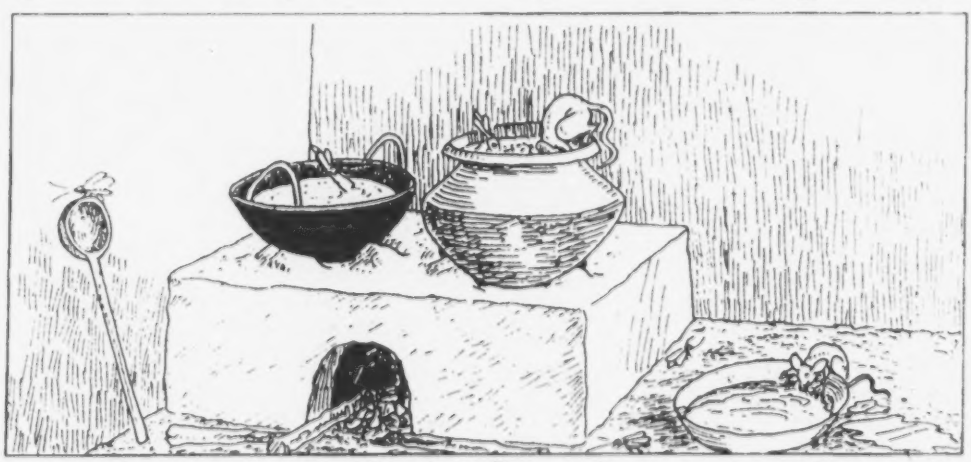
MECSW requested the assistance of the IUCN EEP in developing curricula and textbooks for these new courses. A nine-member curriculum committee was formed by the Ministry to supervise these tasks. The committee is chaired by the Director-General of the MECSW Curriculum Development Centre (CDC) and the EEP Coordinator of the NCS Implementation Project is vice-chairman. Other members are drawn from the CDC, the NCS project and freelance experts.

The curriculum committee prepared a draft curriculum for grades 6 - 8.

पाठ ५ : खानेकुरा कसरी दूषित हुन्छ ?

हामी सबैलाई खानेकुरा चाहिन्छ । हामी धेरै किसिमका खानेकुरा खान्छौं । जथाभावी राखेको, सडेगलेको र बासी खानेकुरा दूषित हुन्छ । यस्तो खानेकुराले हाम्रो स्वास्थ्यलाई बिगार्छ । खानेकुरा दूषित हुने धेरै कारणहरु छन् ।

वजारमा खानेकुरा खुला रुपमा बेचेको देखिन्छ । यस्तो खानेकुरामा धुलो पर्छ । कीराफट्याङ्ग्रा र झिंगा बस्छन् । यसले खानेकुरा दूषित पार्छ ।



खानेकुरा खुला राख्नाले फोहोरमैला पर्छ । यस्तो खानेकुरा मुसा झिंगाले खान्छन् । यसले गर्दा खानेकुरा फोहोर हुन्छ ।

Figure 1. A sample page from a school book developed and tested by IUCN to integrate environment into primary school subjects.The illustrated books so motivated the students that many read them cover to cover before they were used in class.

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Following an integrative approach, the curriculum consists of general objectives, grade-level objectives and content outlines covering population and environmental concerns important to Nepal. The draft curriculum was intensively discussed at a national workshop in which 23 secondary school teachers from different parts of the country and almost as many population and environment experts participated. Based on the revised curriculum, textbook writing for grade 6 is in progress. Such conferences, seminars and training workshops are a regular feature of the EE programme.

Tests and pilot tests of resource materials

In the past two years, EE resource materials have been tested for their relevance and effectiveness. Students have been tested to assess their knowledge and attitudes with regard to the environment before and after using the materials. Nearly 2,500 primary school pupils from 10 experimental and 10 control schools in Dhankuta, Kathmandu and Dang took the tests. Pilot primary school curricula, texts, teachers' directives, and other resource materials were further tested during the 1992 academic year. New EE resource packages for government training centres are being evaluated. The principal objectives are to ensure that the EE resource materials are effective and relevant for the learners, and to find ways to improve them.

Co-curricular and extra-curricular activities

EEP emphasizes a practical approach to all environment-related teaching and learning activities. Primary education texts, teachers' directives, and the EE resource packages for training centres also contain specific instructions for practical application of the texts.

Environmental camps, art workshops and competitions are being organized for primary and secondary school children in collaboration with local NGOs such as Environmental Camps for Conservation Awareness (ECCA) and Nepal Centre for Women and Children's Affairs (NCWCA). These extra-curricular activities have yielded effective results. Although they reach only a limited number of students, they demonstrate the value of exposing learners to practical activities as an integral part of their core curricula, while providing them with the opportunity to participate in extra-curricular activities.

Training, extension and awareness-raising

The NCS places great importance on imparting EE through existing training institutions. Six training centres collaborate with NCS in providing environmental education to government employees, private sector employees and extension workers: the Nepal Administrative Staff College, the Women's Training Centre, the Hotel Management and Tourism Training Centre, the Central Agricultural Training Centre, the Training Division of the Ministry

Figure 2. A sample of training materials developed for trekking guides, encouraging the use of gas for cooking, rather than wood, and the safe placement of stoves to prevent fires.

of Forests and Soil Conservation, and the Agricultural Training and Research Institute.

The Implementation Project assists these centres to integrate environmental concerns in their programmes. This is made easy by the flexibility of the programmes of the institutions. The project has helped to develop a resource package for trainers consisting of a source book of common environmental concerns, a source book on specific areas covered by each training centre, and training manuals.

To foster environment-friendly attitudes and behaviour in the public at large, several programmes have been launched. In addition to the activities mentioned earlier, these include: a series of radio programmes; a wall newspaper for rural areas; a street theatre for female audiences; fellowships for investigative reporting; collaboration with children's magazines; press releases and articles; video films; posters; environmental games; the Nepal NCS newsletter; and booklets, pamphlets and special bulletins.

Partnership with NGOs

The NCS Implementation Project collaborates with national and local NGOs with two specific objectives in mind. Firstly, experience has proved that

working in partnership enhances the capacity of the NGOs involved. Secondly, without the help of NGOs, the NCS project would find it difficult to provide timely technical assistance to government agencies implementing the NCS. NGOs are thus involved in running programme components in whole or in part. For instance, one NGO assisted in preparing illustrations for environmental education primers for primary schools and a journalists' forum prepared and distributed the wall newspaper.

Lessons learned

An environmental education activity should be integrated with an ongoing programme to make the maximum impact.

At the initial stage, the IUCN EEP personnel played a more active role than their counterparts from implementing agencies in launching new components of the environmental education and awareness programme. This resulted in a lessening of the commitment of the agencies concerned. Of late, EEP personnel have been playing a low-key role and this has encouraged the implementing agencies to be more active and to feel a greater sense of involvement. EEP staff are now convinced that in order to ensure the success and sustainability of any environmental education and awareness programme, total commitment and involvement on the part of the implementing agencies is necessary.

Workshops and seminars organized in connection with a particular activity serve as good coordination mechanisms, bringing the concerned parties together to engage in important discussions.

Partnership with NGOs is valuable in securing timely technical assistance.

Environmental education materials, if well thought out and prepared, can be sold to cover the cost of printing.

Zambia: Environmental education

Juliana Chieshe

Abstract

Although the need for environmental education is recognized in Zambia, much remains to be done to establish a strategy and obtain the means to develop fully a programme which will create awareness, change attitudes, equip individuals and communities with knowledge of the environment, and ensure their involvement in solving environmental problems. Education will emphasize the benefits of investment projects started under the National Environment Action Plan which permit people to exploit natural resources without exhausting them.

Introduction

A comprehensive programme for conservation education was described as "the surest long-term strategy to bring about the sustainable use of natural resources in Zambia" in the National Conservation Strategy (NCS), prepared in 1985. Under the NCS, the Environmental Protection and Pollution Control Act was enacted in 1990 and the Environmental Council of Zambia (ECZ) was established.

The NCS did not, however, propose plans of action or a time frame for their execution, and financial and other resources to put the strategy into effect were not provided. A holistic approach to conservation was lacking. The NCS was prepared without broad-based participation, and the fact that the people have not had the opportunity to study it means that many Zambians are unaware of its existence.

The National Environmental Development Plan (NEAP) has been introduced recently to translate the NCS into action. A major goal is to ensure that environmental issues are taken into account in planning development. The Zambia Environmental Education Programme (ZEEP), supported by the World Wide Fund for Nature (WWF), reinforces NEAP; if the environment is to be taken into account in the execution of economic and social policies, wide popular support is needed and here education has an important role to play.

The state of environmental education

In the evolving environmental education strategy, educators collaborate with policy and decision-makers and specialists in the management of natural

resources, as well as with non-governmental organizations (NGOs), traditional leaders, the churches, and youth and women's organizations. The role of educators is to spread knowledge and create awareness which will be translated into action and participation.

In 1993, the inclusion of environmental education in the school curriculum was discussed. Environmental issues have been taken up in science, social studies and home economics courses, and will be extended to syllabuses and texts for other subjects in future. The curriculum review exercise still has to cover teacher training and secondary schooling.

Environmentally-oriented education forms part of the normal activity of certain government Departments: Forestry, Natural Resources, Agriculture, Health, Fisheries, National Parks and Wildlife. Para-governmental institutions such as the Environmental Council of Zambia, ECZ, and the Species Protection Department (SPD) of the Anti-Corruption Commisssion (ACC) are also engaged in environmental education which reaches out to communities.

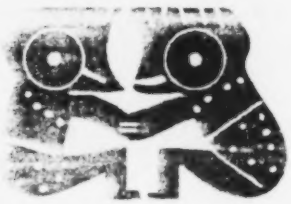
Several NGOs are active in the field of environmental education. Apart from ZEEP, they include the Wildlife Conservation Society of Zambia (WCSZ), the North Luangwa Conservation Project (NLCP), the National Centre for Environment Education (NCEE), the Young Women's Christian Association, the Girl Guides' Association, and the World Wide Fund for Nature. WCSZ has established a network of clubs in schools to create awareness about conservation. The society has prepared educational materials including readers and posters, magazines and a radio programme. Patrons of the clubs and teachers are trained to organize clubs.

In preparation for the inclusion of environmental education in the school curriculum, ZEEP has been training teachers and preparing materials.Trained teachers have been appointed as ZEEP coordinators in 20 districts. ZEEP coordinators organize workshops in environmental education for other teachers, and develop projects for school children, such as tree planting, litter collection and wildlife conservation.

The churches have a role. With their large following, the Baha'i faith, the Catholic Church, the Anglican Church, the Reformed Church of Zambia and the Seventh Day Adventist Church are all helping to promote stewardship of the environment.

Efforts by the World Wide Fund for Nature (WWF) Wetlands Project and ZEEP to enlist local leaders - in particular chiefs and headmen - in nature conservation have met with an encouraging response. There is a need however to adapt environmental education techniques and materials to the particular requirements of this group.

Journalists have been given environmental training in Zambia and abroad. WWF and IUCN - The World Conservation Union have supported workshops for journalists and trainers of journalists. Regionally, the PANOS



Institue and IUCN have worked together to train broadcasters from the Southern African Development Community (SACD) region.

As a result, coverage of environmental issues by the media - both print and electronic - has improved. More needs to be done, however, in particular for rurally-based journalists.

Need for a strategy

A strategy for environmental education has developed slowly in Zambia and much remains to be done. A fully-articulated policy on the environment has to be drawn up by the government, with a policy for environmental education which would serve as the basis of a strategy. (Zambia has some way to go in implementing the "Caring for the Earth" document and Agenda 21 adopted at the World Conference on Environment and Development, which would serve as a guide for an expanded programme of environmental education).

Government Departments dealing with resources - for example, the Departments of Water, Energy and Lands - should make a concerted contribution to the development of environmental education. There is a need for coordination of policies relating to environmental and natural resources issues among Ministries.

Environmental education lacks trained manpower at the primary, secondary and teacher training levels and funding for all aspects of the programme needs to be increased.

Gaps and priorities need to be set in relation to target groups; few activities reach women and youth. A strategy requires the development of methods and techniques of educating all the target groups, accompanied by the design, development, printing and distribution of appropriate teaching materials. Techniques which give an inter-disciplinary or multi-disciplinary character to subjects in the curriculum have to be worked out.

There is a need for NGOs to coordinate their environmental education activities.

Finally, there is an overriding need for a national coordination of environmental education.

Demonstrating the benefits

The aims of environmental education - creating awareness, changing attitudes, giving individuals and communities knowledge of the environment, equipping them with skills to identify and solve environmental problems, and mobilizing popular participation - call for a prior understanding of current perceptions. In its work with teachers, ZEEP has tried to establish what people say, do, and think but do not express about the environment. An indication of some of the perceptions the education programme has to work

with are shown in the box. In order to do away with misconceptions and to change popular attitudes - often negative to environmental protection - the benefits of conservation have to be made apparent.

Education programmes have to be based on what the community perceives about the environment and to work on the barriers people must overcome in making changes in practice.
Woman from the Bisa tribe, Zambia, carrying firewood.
Photo: WWF Roger Le Guen

Some Zambian Perceptions of the Environment

Wild Animals

- There are still a lot of wild animals in Zambia. They cannot finish.Any animal which kills a person should be killed too.
- The Government stops us from killing the animals, so we have to go to hunt when the government is not seeing us.
- Rich men with big guns come to hunt while we look on. They kill large numbers of animals while we starve for meat.
- They asked us to move from our original village so that they could create a national park. Who benefits from the national park?

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- In our language nobody is called a poacher. We are hunters and not poachers.

Fish

- Fish drop from the sky with the rain so it cannot finish from the rivers.
- We cannot observe the non-fishing season, we will starve.

Population

- There are a lot of empty spaces of land on which people have to still settle! There aren't a lot of people in Zambia.
- One can never have enough children!
- A person should exhaust his/her fertility, by having as many children as possible.

Water and Sanitation, Waste.

- Dirty water does not kill a person, only sin can kill a person.

Waste

- The City Council will clean up
- It is not my duty to clean up the surroundings
- I am not employed to clear up
- Even if I throw rubbish anywhere, somebody will come and clean after me

Forest (Deforestation, Afforestation)

- Trees cannot finish in Zambia.
- Which persons or people plant trees? They must be crazy. Nobody plants trees. They grow on their own.
- We still have a lot of trees in Northern Province, therefore deforestation is not a problem.
- If you advise to plant trees, when shall we plant maize?
- The trouble with trees is that they take long to give you the fruits.
- Forests should be burnt to remove all dangerous animals.

Under NEAP, projects with wide participation will be developed as part of the national investment programme. The aim is to provide practical opportunities to solve environmental problems and reverse environmental degradation, and to encourage activities which permit the people to exploit natural resources - for example, fish farming, game ranching, the creation of forest reserves - without exhausting them.

Conclusion

In Zambia there are environmental education programmes provided by different organisations, but the country lacks an integrated environmental management plan which would outline how people are to be educated and their participation gained. Much could be achieved by an overall strategy for environmental education; activities could be facilitated, information exchanged, and coordination amongst the various educational actors enhanced. None the less there are limitations imposed by the number of trained personnel in the field, and basic resources to assist people in their educational work. When it comes to the design of educational programmes, it is important to gather information on people's knowledge and attitudes, so that programmes can be designed that start from the reality of the people.

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Ecuador: Raising environmental awareness

Marco A. Encalada

Abstract

An innovative education programme in Ecuador can claim a large share of responsibility for a dramatic rise in popular awareness of environmental problems. This change has not, however, been matched by a steady improvement in public conduct towards the environment. Behavioural change calls for programmes with long-term goals to interrelate knowledge, opinions, attitudes and behaviours, by means of a well-planned combination of formal and informal education methods. Environmental education is both a prerequisite, to make all people aware of and interested in environmental issues, and an instrument of change wherever social factors have an impact on environmental problems.

Introduction

The educational activities of Fundación Natura's programme "Education for Nature" (EDUNAT) between 1980 and 1993 have played an important role in raising awareness of environmental problems in Ecuador. Environmental education (EE) through EDUNAT has helped to make the environment a subject of public debate, a matter of concern to public opinion, business and pressure groups. EDUNAT, now terminated, has laid the foundations for a strategy for the next decade in which the local, national and world sensitivity to ecological questions will give EE an enhanced role.

Environmental activism was a principal factor in the launching of EE in Ecuador. Public protest over environmental damage in a country with a rich diversity both of fauna and flora and of renewable and non-renewable resources, the organizing of demonstrations, the rallying to the cause of individuals and businessmen who had the ear of State officials, all helped to raise the level of moral support for the Foundation.

When EDUNAT was established in 1980, the major considerations were:

- the need for a proper understanding and clarification of the environmental situation on the part of those who would carry out an EE programme;
- the need to inform decision makers about the severity of environmental problems and their immediate and long-range consequences for the economy, the country's biodiversity levels and the general welfare of the population;

- the urgency of decisions to change the spectrum of social factors which influence environmental problems.

A prime need was to motivate public opinion leaders to become interested in environmental problems, to make a habit of thinking of action in favour of the environment as a priority, and to work towards solutions of some of the problems. Confidence had to be established in Fundación Natura and its EDUNAT project.

The environmental crisis facing the country demanded that education and communication be combined.

- The first step in planning EE was to identify and define the environmental problems, their causes and manifestations, the effects, the possibilities of solution - scientific, legal, technological, financial or other - and the degree of urgency.

- The next step was to determine the ways in which EE could contribute to solving the problems. Should the environmental crisis be dramatized? Should individuals be blamed for their habits, behaviour and attitudes towards their surroundings? Should individuals be warned of the danger of exposure to environmental hazards? Should new behaviour and habits towards nature be suggested?

- Definition of the target groups was important. Who was responsible for environmental damage and who were the victims? Who would lead and how could responsibility be shared? Where were the targets for EE?

- Finally, the project managers had to determine the forms and methods EE should adopt . The decision was to avoid models based on rigid umbrella-type theories, to work within existing socio-ecological situations, and to develop various patterns of EE appropriate to differing contexts.

Systems and themes

Three systems can be distinguished:

- long-term (10 years): policies and goals which created a framework to tackle the priority environmental problems;

- medium-term (five years): specific education programmes and projects to deal with the different social causes and factors of selected environmental problems within the framework of the policies established under the first system;

- short-term (up to two years): micro-projects in the fields of education, communication and information to deal with the social factors surrounding one or two specific environmental problems.

This system provided support to other major independent projects requiring a low-profile EE component.

The selection of themes was a critical issue. It was difficult for financial reasons to ensure that EE aims coincided with the opportunities for, or priorities of, local or international funding. Situations which tended to create confusion or lack of coherence arose. Most education/communication programmes are, for example, components of larger development programmes and frequently, the specific goals of EE are not linked to the larger work themes from an educational point of view.

Independent education projects conform to the overall policy of the institutions which sponsor them. If the institution has not defined the environmental problems to be focused on, the selection of subjects to be dealt with becomes haphazard.

Even when the priority environmental issue to be dealt with in an education programme has been chosen, the problem may still remain of not knowing which of the primary causes to deal with from an educational point of view.

Finally, independent education projects are at times so small or isolated from the main context that the subjects treated do not give an idea of the magnitude of the problems, their causes, and the social impact. The contribution of the project then becomes insignificant.

EDUNAT has had to deal with some of these situations and to a certain degree has overcome the problems.

Fundación Natura prepared the first in-depth environmental profile of Ecuador in 1981. This excellent diagnosis has influenced all the foundation's later work and that of other groups as well. The profile explored the environmental problems with their natural effects and aftermaths, the inherent causes and the social factors. Diagnoses are updated regularly and seminars have been held in an attempt to clarify priorities for organizational development.

Sociological research by EDUNAT has sought to reconcile the priorities of other public and private environmental institutions and groups with those of Fundación Natura, and to establish the degree of information available as well as everyday attitudes and behaviour of people concerning the environment in their various social roles. Two national surveys were made at an interval of six years to establish levels of knowledge, attitudes and practices of the population regarding environmental problems and to identify solutions.

Working policies

Fundación Natura has explicit policies for EE. The foundation encourages basic or applied research without becoming directly engaged, and disseminates the results of research.

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Fundación Natura does not engage in tasks which are the natural responsibility of other institutions, but it does motivate work which contributes to the solution of environmental problems it has identified.

Any cooperation with other organizations must imply a minimum of shared work so that experience, knowledge, and work methods can be exchanged. Only educational activities with an identified need for a technical team from the foundation are accepted.

The general operating plan for Fundación Natura incorporating a budget to present to financial sponsors covers the total period of projects or programmes (four to five years in the case of EDUNAT). The foundation subsequently draws up an operating plan for the fiscal year and this serves as the basis for quarterly plans and the weekly work plans for individual staff members. Progress reports are issued quarterly and annually. This approach makes it possible to apply modular planning which is adjusted to the availability of resources and the priorities of the donor institutions. EE projects must be evaluated by an outside team.

EDUNAT paid no more than 25 percent of publicity and advertising in the mass media; the remainder had to be covered by the media or by co-sponsors. No cash was donated to any institution for educational activities, but cooperative operations were financed.

Production of education and communication materials was decentralized, with at least 75 percent of total production stemming from local initiatives; 50 percent of material reproduced allowed for local trial and adaptation. All educational materials were tested to ensure that they met the needs of the audiences addressed.

In local communities, EDUNAT did not engage in mass education activities, which were left to other institutions. In exceptional cases of ecological emergency or to test new materials over short periods, EDUNAT did, however, work directly in such communities.

The staff of EDUNAT were on temporary contracts in line with a policy of efficiency and austerity; as each phase ended, technical/administrative teams were disbanded. Education/communication strategies were designed for different target audiences.

Specific approaches

In the first stage of EDUNAT, a "shock strategy" was used with key figures in government, chambers of commerce and various professional organizations. Audio-visual slide sets were presented privately to these individuals at their places of work to demonstrate the environmental problems, their causes, social factors, and alternative solutions. One set (eight minutes) described the main environmental problems in the world in general and in Ecuador in particular. Five other sets (five minutes each) concentrated on subjects of interest to particular categories:

- the role of political leaders;

- the influence of agricultural and industrial processes on the environmental situation;
- the effects of environmental problems on human health;
- workers and environmental problems and the effect of the latter on social welfare; and
- the role of EE in solving environmental problems.

In the discussion which followed each presentation suggestions by the EDUNAT staff present (biologists, anthropologists, communicators and educators) for the solution of environmental problems were sometimes well received. A brochure was given to the leaders for later reference.

At a second level, group presentations were made in institutions - provincial and municipal councils, labor unions and professional organizations. They were also given brochures to reinforce the messages and to suggest corrective action. Special articles were published in the journals of the participating institutions.

Owners and directors of the mass media were an important target group. The same "shock strategy" was used to motivate them and obtain their authority for senior writers to take part in a seminar. Participants in the seminar were encouraged to propose solutions rather than simply to receive information. Journalists began to use EDUNAT and Fundación Natura as a source of information.

Release of information to the media was carefully planned. The aim was to demonstrate to the population that environmental damage was widespread and deserved their attention.

Twenty 15-minute radio programmes were broadcast by 15 radio stations. Fundación Natura sponsored scientific television programmes which strengthened the public perception of environmental concerns.

In a second stage, EDUNAT gave greater emphasis to the search for solutions to environmental problems. Five objectives were added:

- a clearer definition of environmental problems - their causes and effects, and social factors;
- identification of pragmatic solutions - general and specific - with an acknowledgment of the breadth of the problems and the depth of their natural and social causes;
- fostering of popular interest in participating through public or private institutions in decision-taking which provokes change in laws, policies, projects, professional training etc.;
- generating new attitudes, behaviour and habits by stimulating awareness of environmental problems among children and adolescents;

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- fostering the interest of private enterprises in undertaking EE activities for their own constituencies and the public at large.

Work with the media was intensified. Finished products were supplied to TV and radio stations.

The educational curriculum was reviewed to include new notions and concepts. Teachers were trained from the environmental perspective, and teaching materials were produced and distributed.

In the third and final stage of EDUNAT, the principal focus was on the industrial production system, the handling of natural resources and the furnishing of services to community development. The industrial audience was categorized and included a range of administrators and professionals - also academics. The procedures and media strategies employed earlier were repeated. In this period there was a marked improvement in the contribution of the media to public debate, with a greater diversity of approach, and a more profound analysis of causes and effects.

People's behaviour in relation to the environment

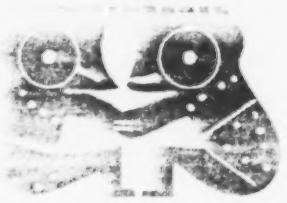
The 1990s showed some changes in people's behaviour towards the environment compared with 1984, yet it cannot be claimed there is a population motivated to environmental action.

In 1984, 84.6% of people believed that the population at large could do something to remedy environmental problems, yet no more than 5.6% were able to make up to six appropriate suggestions. What was declared were actions around the same theme: garbage and tree planting.

In 1990, despite an apparent growth in people's thinking and sentiments toward protecting the environment, all of the practices were mostly along the same lines as in 1984. Some improvements occurred in actions at home with 20% taking positive actions for the environment, but more complex and influential aspects did not change. 24% took positive steps elsewhere.

Political leaders were the most enthusiastic respondents concerning environmental protection practices at home (42%), followed by student leaders (29.5%) and professionals (26.7%). Nevertheless, when comparing their answers with what they actually do, it turns out that the actions are - in order - on garbage, chats on environment, handling of food, and water savings. Averages are increased by high responses of a subjective nature, for instance "being concerned about environmental problems", which actually represents nothing in terms of behaviour.

Practices at other places besides the home, were stated as support to protecting the environment, not having captive wild animals, and recognizing not having done damage to nature. These aspects were considered by the study as positive behaviours toward nature.



Evaluation of the effect of EDUNAT'S EE programme on knowledge and attitudes

In 1984, 4.5% of people, from a sample drawn out of all the provinces, were able to correctly understand the meaning of environment and its most important "components". In 1990, 80.2% of respondents demonstrated a fair understanding of this meaning, and the notions implied by it.

Levels of general knowledge about environment were not associated with the respondent's, social class, sex and occupation. However a persistent association was observed between high levels of knowledge and higher levels of schooling.

In 1984, less than 5% of people could identify the most important 10 environmental problems of the country.
In 1990, this had increased to 18%, for 41 broad environmental problems; while 51% of people had a medium level knowledge of these problems. Only 31% had low levels.

Environmental problems were split into two groups, around which respondents would feel or envisage themselves as either "agents" or "victims". The results showed only slight differences between them. Contrary to the hypothesis, people tended to be more conscious of "agent-envisaged-problems", than "victims-envisaged-problems".

It was found that despite EDUNAT having drawn attention to more than 60 broad environmental issues over its 13 years of work, some were highlighted and this matched with the awareness amongst the respondents. Well known issues were:

• Environmental impact of petroleum products	85.3%
• Environment pollution due to pesticides	81.6%
• Endangering of species	78.5%
• Effects of noise on people	76.5%
• Usefulness of protected areas	76.0%
• General petroleum contamination	75.5%
• Natural disasters	74.5%

Poorly treated issues by EDUNAT also had the lowest levels of people's knowledge.

• The role of scientific research in the environmental problematic	25.7%
• Time which would be required to solve the most critical environmental problems	31.0%
• The state of marine biological resources	34.8%
• The rates of growth of the desert in the country	43.4%

In 1984, 55% of people were more worried about human health problems than the environment. The 1990 survey showed that people were very much aware of the relationship between environmental problems and the human state of health.

In 1984 more than 50% of people believed that the country's economic development couldn't take place without environmental damage. The 1990 results, on the contrary, showed a population concerned by the fact that economic development will not be possible if environmental damage persists (95%).

People's attitudes to adopting concrete solutions for protecting the environment rose from 8% in 1984 to 17% in 1990.

Encalada, Marco (1990).

Sources of funding

The United States Agency for International Development (USAID) provided about half the total budget of EDUNAT over its life span of 13 years. Other international sources contributed 10 percent of resources and local institutions some 40 percent. The largest share of operating costs - up to 70 percent - was for materials for the school system. A minimum input of international technical personnel kept staff costs low.

An evaluation of stages one and two of EDUNAT shows that costs were only one-fifth of those for similar operations in other Latin American countries and much lower than for projects outside the region.

Conclusion

EDUNAT cannot claim a monopoly of the credit for changes in environmental consciousness in Ecuador over the past 13 years. Many of the recent environmental initiatives nevertheless bear the stamp of EDUNAT influence as some of the findings of the evaluation demonstrate. The effectiveness of EE cannot be observed in direct changes in the environment, but in the way individuals and institutions apply method and procedures and mobilize action which is known to bring about change.

The leadership and public opinion, the newspapers and other mass media have been positively influenced. Surveys in 1984 and 1990 show that a great number of people have radically changed their perceptions and ideas on environmental problems as well as their attitudes towards nature as a result of EE. National ecology groups have been created.

Successive governments have declared their interest in environmental problems and have adopted decisions associated with environmental protection. The National Congress has created a Commission on the Environment and a general environmental law is in preparation.

The 1990s have been officially declared a Decade for Eco-development in Ecuador, and Ministers have been urged to develop appropriate actions. Groups of peasants and ethnic minorities have demanded State protection for their natural environments, and have asked for authority to deal with the problems in their own way. There is a tendency for neighbourhood groups to organize their own defences against acts which threaten the environment, local scenery, or their health or financial situation.

There is, however, a persistent gap between the perception of environmental problems and behavioural change, between awareness and motivation. One conclusion is that a better bridge is needed between the informal awareness-raising education component of EDUNAT and formal environmental education as a way to develop coherence between thought and action.

Experience with EDUNAT indicates that EE which has an integral, multi-system approach, flexibility in the methodologies applied, and which is open to creativity in the forms of communication used, is a fundamental prerequisite for all activities aimed at progress towards a better environment.

EE incites interest and clears the ground for environmental protection activities in all sectors, even in difficult productive, social and political situations. It also creates a climate of positive opinion and awareness, which makes it possible to set up and maintain the administrative management of the environment and natural resources.

The main conclusion drawn from the results of EDUNAT is that sustained action to interrelate opinions, attitudes and behaviours towards nature is necessary and that this will only be possible in the long term if an organic and well-planned combination of formal and informal education methods is employed. In addition, EE should be used both as a pre-condition to make all people aware of and interested in environmental issues, and as an instrument of change wherever social factors have an important impact on environmental problems.

Lessons learned

Planning should be the essential tool of EE educators and managers, whether they are dealing with small or large programmes or projects. Planning should not be a matter for just a small bunch of administrators or workers from the programme, but of all people involved in the process of researching, implementing, monitoring, and evaluating.

Total quality management is applicable to EE programmes, even for those which might be considered small and isolated from large strategies. The quality of EE should be measured in every step of the various formal and informal processes and sub-processes including tangible and intangible products and by-products.

When managing EE programmes, be open to the creation of possibilities which ferment real changes in the multiple-causal environmental problems. Be flexible not only in content (either if it is purely environmentally oriented or aimed to sustainable development), but also when identifying strategies towards all main actors involved in environmental problems and conflicts. Allow diverse communication and/or education systems to work simultaneously and autonomously under the coordination of a master management process. How frequently are EE managers eliciting communication and education initiatives to rise from bottom up to nourish the entire programme?

And finally, new focus should be given to education and communication research in support of EE programmes, so as to actually allow these disciplines to cooperate more efficiently to the environmental problematic. For instance, what should people know about the environmental problematic so as to make them more environmentally-oriented in daily life? What should environmental educators look at when measuring people's environmental attitudes and behaviours and habits? There seems to be a tendency to replicate mechanically in the field of environment the orthodoxy of past communication research, either in the manner of the most simple social marketing view of life, or in the purely pedagogic one. It is one matter to work with research in support of EE programmes, and another to have education and communication research to support the interpretation of the environmental problematic. Both perspectives should be incorporated in the management of EE programmes with a clear distinction of the methodological implications and the use of the findings.

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